



Asset Management Plan

Road Pavement

2018-28



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1 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner.

This asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services over a 10-year planning period.

This plan covers the road pavement infrastructure assets.

1.2 Asset Description

These assets include:

- Road Surface - 302Km;
- Road pavement-302Km.

These infrastructure assets have significant value estimated at \$766,974,493.

1.3 Levels of Service

Our present funding levels are sufficient to continue to provide existing services at current levels in the medium term.

If sufficient funding levels are not maintained, the main services consequences are:

- pavement condition-ride quality;
- Increase safety issues;
- Reduce capacity and utilisation.

1.4 Future Demand

The main demands for new services are created by:

- Population;
- Available modes of alternative transport;
- Demographics.

These will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management

practices include non-asset solutions, insuring against risks and managing failures.

Demand management practices for Council's Road infrastructure asset includes:

- Modification of access to asset, for example in local area traffic management schemes;
- Restriction on time or type of use of asset; e.g. heavy vehicles, speed;
- Influence use of asset; - e.g. public transport subsidies, parking levies;
- Change habits or promote alternatives; E.g. work from home;
- Provision of alternatives e.g. alternate transport modes.

1.5 Lifecycle Management Plan

What does it Cost?

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) includes operations, maintenance, renewal and upgrade of existing assets. Over the 10-year planning period, the funding required is \$72,737,000 or \$7,274,000 on average per year of which \$4,755,000 relates to projected renewals.

Roads are long life assets and the age profile of this asset class results in the requirement for only a small amount of renewal work during the planning period. Overall, our road assets are depreciating at \$8,653,348 annually and budget allocation over and above the projected renewals covered by this Asset Management Plan is required to ensure the future sustainability of this asset class beyond the 10-year planning period.

1.6 Financial Summary

What we will do

Estimated available funding for this period is \$81,171,000 or \$8,117,000 on average per year as per the long-term financial plan or budget forecast. This is 112 percent of the cost to sustain the current level of service at the lowest lifecycle cost over the 10-year planning period.

The infrastructure reality is that only what is funded in the long-term financial plan can be provided. The emphasis of the Asset Management Plan is to communicate the consequences that this will have on

the service provided and risks, so that decision making is “informed”.

The allocated funding provides a surplus of \$843,000.00 on average per year over the projected expenditure required to provide services in the AM Plan. This is shown in the figure below.

The surplus should be set aside to cover the difference between annual depreciation and renewals over the planning period. This will ensure that the existing levels of service can be maintained beyond the 10-year planning period and for the life of the assets. This effectively returns the sustainability ratio to 1 across the life of the assets.

Projected Operating and Capital Expenditure

Randwick CC - Projected and Budgeted Expenditure for (Roads_S3_V9)

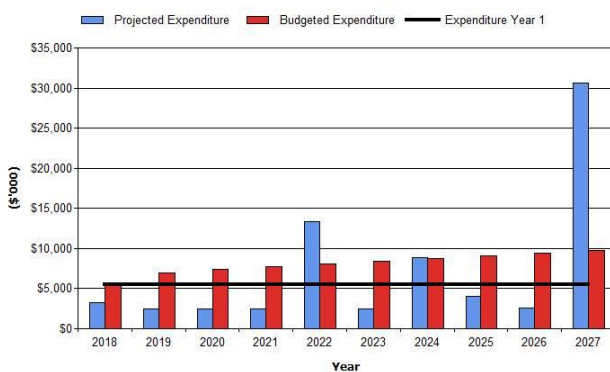


Figure values are in current (real) dollars.

We plan to provide road infrastructure services for the following:

- Operation, maintenance, renewal and upgrade of road pavement and surface listed in table 2.1 to meet service levels set by in annual budgets;
- Asset renewals and upgrades within the 10-year planning period.

Managing the Risks

Our present funding levels are sufficient to continue to manage risks in the medium term.

There are risks associated with providing the service and not being able to complete all identified activities and projects. Major risks to road pavement and surface are potholes, edge breaks and rutting.

The main risk consequences are:

- Injuries or loss of life;
- Property damage.

We will endeavour to manage these risks within available funding by:

- Inspecting 20 percent of the network each year;
- Use inspection out come to identify assets at risks and prioritise and include those assets into capital works program.

1.7 Asset Management Practices

Our systems to manage assets include:

- Technology One;
- PARMMS Road Manager;
- GIS (ESRI Arcmap);
- Risk management practices and tools.

Assets requiring renewal/replacement are identified from capital work program generated by the road pavement management system.

1.8 Monitoring and Improvement Program

The next steps resulting from this asset management plan to improve asset management practices include:

- Continue annual road condition survey;
- Review and improvement of maintenance practices;
- The procurement of a Strategic Asset Management System to allow sophisticated modelling, forecasting and risk management; (*Key Asset Management Strategy 7*)
- The formation of an Asset Management Steering Group to ensure a consistent asset centric approach across the organisation that is consistent with the Asset Management Policy and Strategy; (*Key Asset Management Strategy 2*)
- Further identification and refinement of costs associated with managing this asset class. (*Key Asset Management Strategy 4*)

These next steps are aligned with Key Strategies identified Council’s Asset Management Strategy 2018-28.

2. INTRODUCTION

2.1 Background

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 10-year planning period.

This asset management plan is to be read with the following associated planning documents:

- The Randwick City Plan;
- Delivery Plan 2018-21 and annual Operational Plans;
- Asset Management Policy;
- Asset Management Strategy 2018-28;
- Long Term Financial Plan 2018-28;
- Resourcing Strategy-Workforce Plan 2018-28;
- ICT Digital Strategy 2018-28;
- Randwick City Council Community Consultation Principles and Consultation Planning Guide.

This plan aligns with the Asset Management Strategy 2018-28 and covers a 10-year planning period. Figures within the plan extend beyond the 10-year planning period for the purpose of projecting asset management challenges beyond the life of the plan.

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide transportation services.

Table 2.1: Assets covered by this Plan

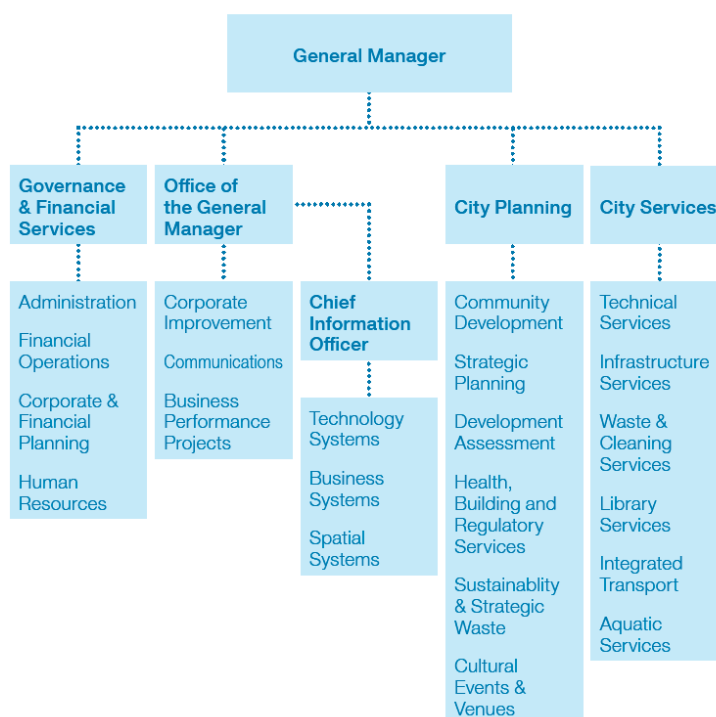
Asset Category	Quantity	Replacement Value
Road Surface	2,558,519.45 m2*	\$111,166,266
Road Pavement	2,733,157.95 m2	\$655,675,344
TOTAL		\$766,841,611

*Concrete roads do not have separate wearing course and do not add to the quantity of road surface asset data.

Table 2.1.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Council Representatives (Includes Councillors and the Mayor)	<ul style="list-style-type: none"> • Represent needs of community/shareholders. • Allocate resources to meet the organisation’s objectives in providing services while managing risks. • Ensure organisation is financially sustainable.
Council Officers	<ul style="list-style-type: none"> • Manage Road Assets. • Ensure level of service provided meets needs of residents and visitors. • Implement the components identified in the Road asset management plan.
Residents	<ul style="list-style-type: none"> • Core users of Road assets due to their likely frequency of use. • Their needs, wants and expectations are conveyed to the Council and should be reflected in desired levels of service.
Visitors	<ul style="list-style-type: none"> • Second largest users of Road assets due to their likely frequency of use. • Their needs, wants and expectations drive the development in areas of the highest visitor usage and also commercial areas.
Insurers	<ul style="list-style-type: none"> • Insurers have interest in implementation of systems which allow Council to gain better knowledge of the condition of their assets. • Systems should be reflected in the number of claims made against each asset group.

The organisational structure for service delivery of infrastructure assets is detailed below.



2.2 Goals and Objectives of Asset Ownership

Our goal in managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance;
- Managing the impact of growth through demand management and infrastructure investment;
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service;
- Identifying, assessing and appropriately controlling risks, and
- Linking to a long-term financial plan which identifies required, affordable expenditure and how it will be allocated;
- Continuous improvement in asset management practices.

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2015 ¹;
- ISO 55000².

2.3 Plan Framework

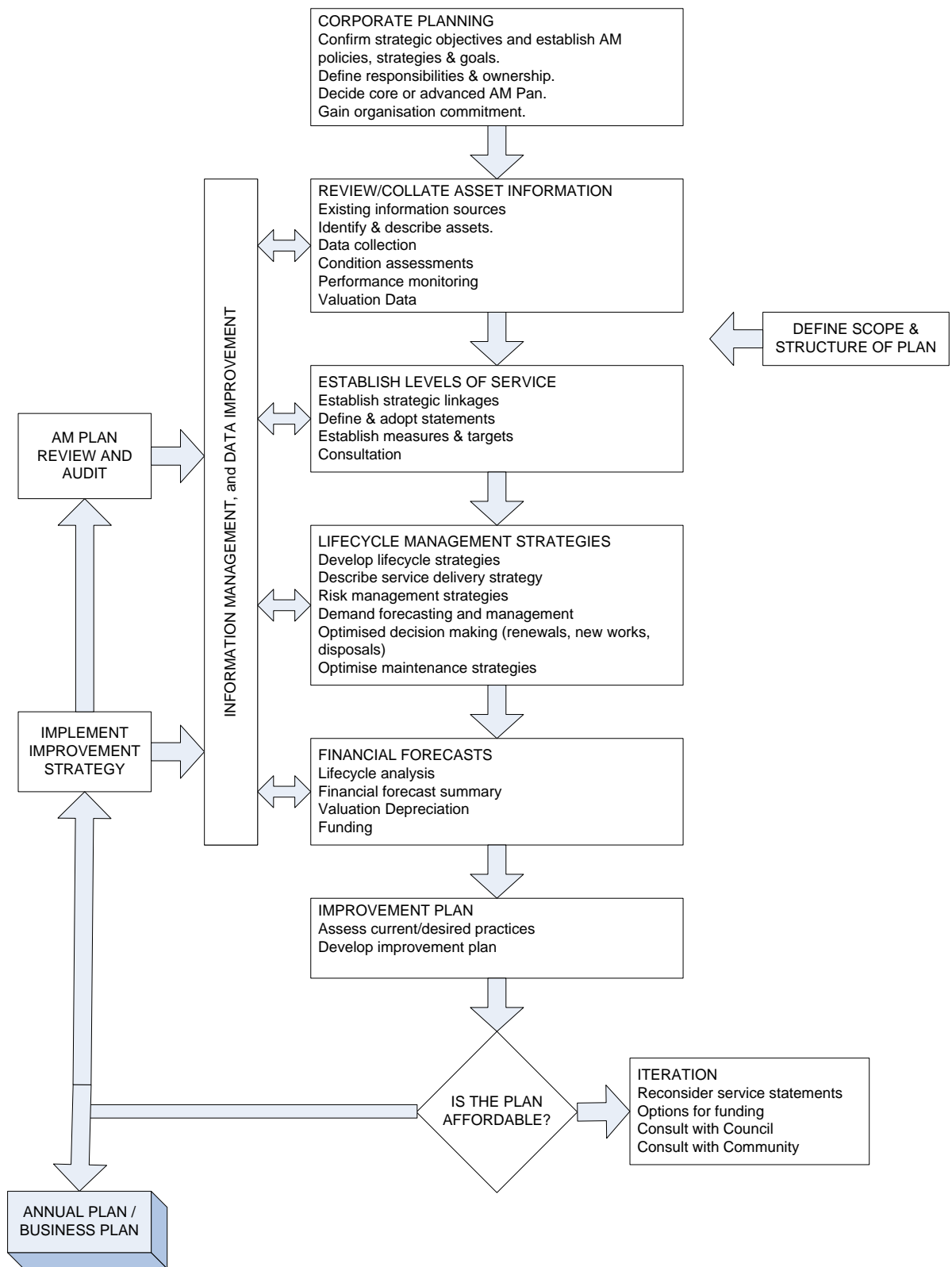
Key elements of the plan are:

- Levels of service – specifies the services and levels of service to be provided by the organisation;
- Future demand – how this will impact on future service delivery and how this is to be met;
- Lifecycle management – how Council will manage its existing and future assets to provide defined levels of service;
- Financial summary – what funds are required to provide the defined services;
- Asset management practices;
- Monitoring – how the plan will be monitored to ensure it is meeting organisation’s objectives;
- Asset management improvement plan.

A road map for preparing an asset management plan is shown below.

¹ Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2 | 13

² ISO 55000 Overview, principles and terminology



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 10-year planning period in accordance with the International Infrastructure Management Manual³. Core asset management is a 'top down' approach where analysis is applied at the system or network level. An 'advanced' asset management approach uses a 'bottom up' approach for gathering detailed asset information for individual assets.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

In 2014, Council commissioned a community satisfaction survey conducted by Micromex Research^A. The survey was administered by a computer aided telephone system to a sample of 1,000 residents. The most recent customer satisfaction survey reported satisfaction levels for the following services.

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Satisfaction Level*
Overall satisfaction with Council's performance	95%
Maintaining local roads	72%
Traffic management	69%
Street cleaning	85%
Constructing cycle ways	63%

*Based on Top 3 box (percentage of residents indicating they are very satisfied, satisfied, or somewhat satisfied).

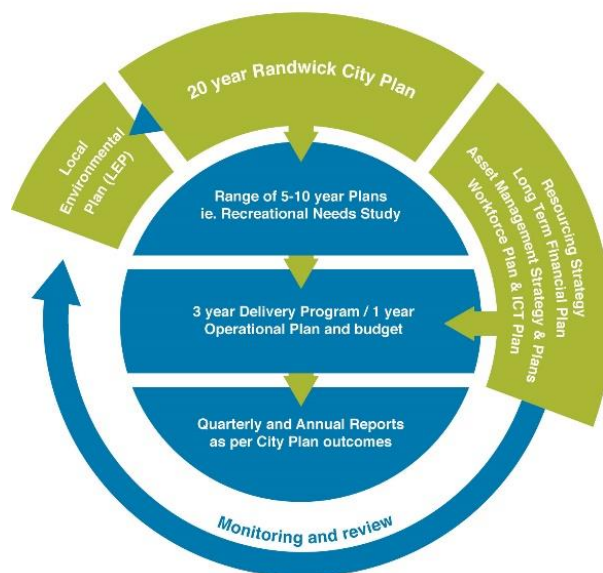
The community satisfaction survey ranks the maintenance of local roads as being of extremely high importance. The mean measure of community importance for the maintenance of local roads was little changed at 4.50 (1-5 scale) since the last survey in 2012.

Community satisfaction information is used in developing the 10-year Randwick City Plan and in the allocation of resources in the budget.

3.2 Strategic and Corporate Goals

This asset management plan is prepared under the direction of the 10-year Randwick City Plan and within the Integrated Planning and Reporting (IPR) framework.

Integrated Planning and Reporting framework



This plan will guide the delivery of actions by Council to achieve the following City Plan Outcomes:

Outcome 1: Leadership in Sustainability.

Outcome 6: A Liveable City

Relevant goals and objectives and how these are addressed in this asset management plan are:

Table 3.2: Goals and how these are addressed in this Plan

Randwick City Plan Outcome	Direction	Objective	How Goal and Objectives are addressed in IAMP
Outcome 6: A Liveable City	Direction 6a: Our public infrastructure and assets are planned, managed and funded to meet the community expectations and defined levels of service.	Implement the strategic asset management system to deliver intergenerational equity and meet the Council’s obligations as the custodian of our community’s assets.	The implementation of a Strategic Asset Management System is a part of the monitoring and improvement program within this Asset Management Plan.
Outcome 6: A Liveable City	Direction 6a: Our public infrastructure and assets are planned, managed and funded to meet the community expectations and defined levels of service.	Conduct programmed asset maintenance management in accordance with adopted service levels.	The Roads Asset Management Plan includes funding for operations and maintenance and provisions for performance monitoring against adopted service level.

Outcome 6: A Liveable City	Direction 6c: The safety of our community is paramount and is acknowledged and supported through proactive policies, programs and strategies.	Conduct minor reactive maintenance management in accordance with adopted service levels.	<ul style="list-style-type: none"> • Respond to customer requests within service level agreements. • Identify High and Extreme risk roads. • Planned Inspections for High and Extreme risk roads. • Develop an operational and maintenance plan and allocate funding to carry out remediation work as required.
Outcome 1. Leadership in Sustainability	Direction 1a: Council has a long-term vision based on sustainability	Ensure financial strategies underpin Council's asset management policies and strategic vision	<ul style="list-style-type: none"> • The Roads Management Plan aligns with Council's Resourcing Strategy, including the Asset Management Strategy, Workforce Plan and Long-Term Financial Plan.

Randwick City Council will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section-6.

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act 1993	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long-term financial plan supported by asset management plans for sustainable service delivery.
Workplace Health and Safety Act 2011	<i>"Protecting workers and other persons against harm to their health, safety and welfare through the elimination or minimisation of risks arising from work..."</i>
Australian Accounting Standard AASB116	Reporting on asset condition and consumption to Councilors, management and the community.
Civil Liability Act 2002 and Civil Liability Amendment (Personal Responsibility) Act 2002	Protects the Council from civil action by requiring the courts to take into account the financial resources, the general responsibilities of the authority and the compliance with general practices and applicable standards.
Roads Act 1993	To provide public access to roads, to classify roads, to act as the local road authority, to carry out certain functions e.g. road works and to regulate activities on public roads.
Native Vegetation Act	To manage native vegetation, to prevent broad scale clearing, to protect native vegetation, to improve native vegetation and to encourage revegetation of land.
AS 1742 - Manual of uniform traffic control devices	The AS 1742 Set provides you with essential Australian Standards® you need to help regulate, guide and warn drivers about road conditions.
Australian Road Rules	To ensure compliance and uniformity with road rules in the State and elsewhere in Australia.

3.4 Customer Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

Quality How good is the service ... *what is the condition or quality of the service?*

Function Is it suitable for its intended purpose *Is it the right service?*

Safety Is it safe for its intended purpose ?

Capacity/Use Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the expected levels of service based on resource levels in the current long-term financial plan.

Organisational measures are measures of fact related to the service delivery outcome e.g. number of occasions when service is not available, condition percentages of Very Poor, Poor/Average/Good, Very Good.

These Organisational measures provide a balance in comparison to the customer perception that may be more subjective.

Table 3.4: Customer Level of Service

	Expectation	Performance Measure Used	Current Performance	Expected Position in 10 Years based on the current budget.
Service Objective: Provision of safe and efficient road network.				
Quality	Provide road that is smooth and free from obvious defects.	Respond to CRM's within SLA timeframe.	91.85% CRM's resolved within SLA time frame for potholes.	Increase % resolved within SLA time frame.
			86.21% CRM's resolved within SLA timeframe for road pavement.	Increase % resolved within SLA time frame.
	Routinely inspect road network.	20% of the network to be inspected annually.	Achieved.	Maintain the current position.
	Confidence levels		High	Medium
Function	Ensure that Council roads meets user requirements for travel time and availability.	Customer satisfaction rating (for maintaining local roads).	3.08 satisfaction survey in 2014, up from 2.9 in 2012.	Increase in customer satisfaction survey results.
	Confidence levels		Medium	Medium
Safety	Provide roads free from hazards.	Reduce insurance claims due to road hazards.	18 claims in 2014. 19 claims in 2015. 14 claims in 2016.	Reduce number of claims per annum.
	Confidence levels		Medium	Low
Capacity and Use	Utilisation of existing road network to its optimum level with room for expansion.	Customer satisfaction survey results.	2.92 customer satisfaction for traffic management in 2014 up from 2.82 in 2012.	Increase in customer satisfaction survey results.
	Confidence levels		Low	Low

3.5 Technical Levels of Service

Technical Levels of Service - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services; (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc.),
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition; Maintenance activities enable an asset to provide service for its planned life (e.g. road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally; (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.⁴

Table 3.5 shows the technical levels of service expected to be provided under this AM Plan. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

Table 3.5: Technical Levels of Service

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost
TECHNICAL LEVELS OF SERVICE				
Operations				
	Routine Street Cleaning. Make sure roads are cleaned and free from debris.	Frequency of cleaning.	Scheduled Street cleaning program.	
	Apply a risk management approach to road inspections.	20% to be inspected annually.	20% inspected annually.	Maintain current performance.
		Budget	\$992,000.00	
Maintenance				
	Pothole patching to avoid extensive damage to the road surface.	Respond to CRM’s within SLA timeframe.	91.85% CRM’s resolved within SLA timeframe for potholes.	

⁴ IPWEA, 2015, IIMM, p 2 | 28.

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost
	Heavy patching to avoid rapid deterioration to road pavement.	Respond to CRM's within SLA timeframe.	86.2% CRM's resolved within SLA timeframe for pavement.	
		Budget	\$1,515,000.00	
Renewal				
	Resurfacing of roads -Road surface to be in satisfactory condition.	Surface condition/useful life.	Currently 75% of road surface is in average to good condition.	Increase the percentage of road surface in average to good condition.
	Road pavement to be in satisfactory condition.	Pavement condition.	Currently 72% of road pavement is in average to good condition.	Increase the percentage of road pavement in average to good condition.
		Budget	\$3,000,000.00	
Upgrade/New				
Intersection upgrade	Improve road safety.	Number of crashes.	In 2015 Fatal crashes 3, total number of crashes 286. In 2016 Fatal crashes-0 total number of crashes-273 within Randwick LGA*	Reduce crashes in black spots.
		Budget	Budget varies	

*Transport for NSW- Crash and casual statistics

It is important to monitor the service levels provided regularly as these will change. The current performance is influenced by work efficiencies and technology, and customer priorities will change over time. Review and establishment of the agreed position which achieves the best balance between service, risk and cost is essential.

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population	140,660 (As at June 30 2016, ABS estimated resident population – whole of Randwick Council area).	NSW Department of Planning and Environment projects a 23% increase in population by 2036 within Randwick Local Government Area.	An increase in population will require an increase in community and infrastructure services. Existing services may require amendment to cater for changes in use or increased patronage.
Available modes of alternative transport	2014 community survey indicates that constructing cycle ways are important (3.34, where 1=not at all important, 5=very important).	NA	Cycle ways and footpaths.
Demographics	Randwick City Council has: -18% over 60 YO -43% in the 20-45 YO group (As at June 30 2016, ABS estimated resident population – whole of Randwick Council area).	Greater proportion of 10-20 YO (>35% growth). Greater proportion of over 60 YO (>45% growth). Low proportion of 25-45 YO (<10% growth).	Greater need for aged and disability access. Increase in population will require improvements to public transport infrastructure and accessible recreational infrastructure.

4.4 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices can include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this asset management plan.

Table 4.4: Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
Vehicle ownership (population)	An increase in population will require an increase in community and infrastructure services.	<ul style="list-style-type: none"> Provision of alternative transport modes. Introduce public transport subsidies and parking levies.
Available modes of alternative transport	Increase in footpath and cycleway users.	<ul style="list-style-type: none"> Dedicated cycle ways and maintain the connectivity. Identify and Upgrade high use footpaths
Demographics	Greater need for aged care facilities and disability access. Increase in population will require improvements to public transport infrastructure.	<ul style="list-style-type: none"> Provision of easy access to all transport modes. Incorporate up to date design standards.

These demand drivers may impact on footpath assets as land is modified to meet changing community needs.

4.5 Asset Programs to meet Demand

The new assets required to meet demand can be acquired, donated or constructed. Additional assets are discussed in Section 5.5. The summary of the cumulative value of additional asset is shown in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand – (Cumulative)

Randwick CC - Upgrade & New Assets to meet Demand (Roads_S3_V9)

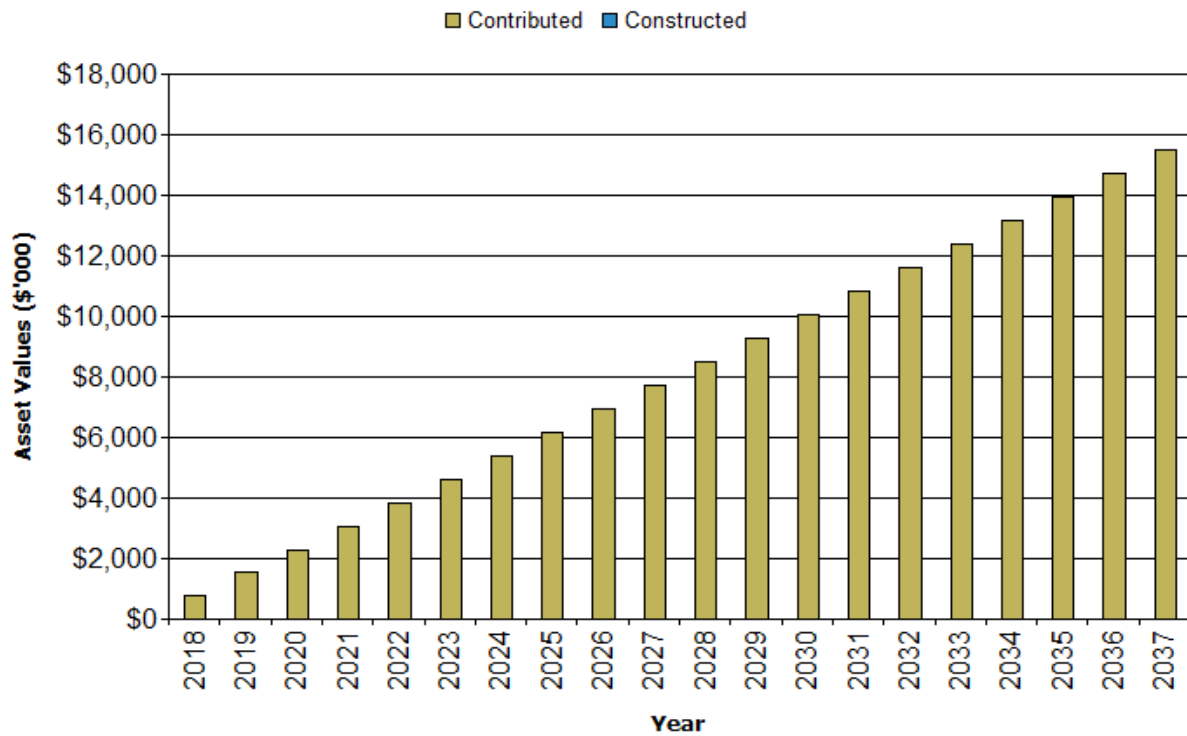


Figure values are in current (real) dollars.

Acquiring these new assets will commit ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs for inclusion in the long-term financial plan further in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

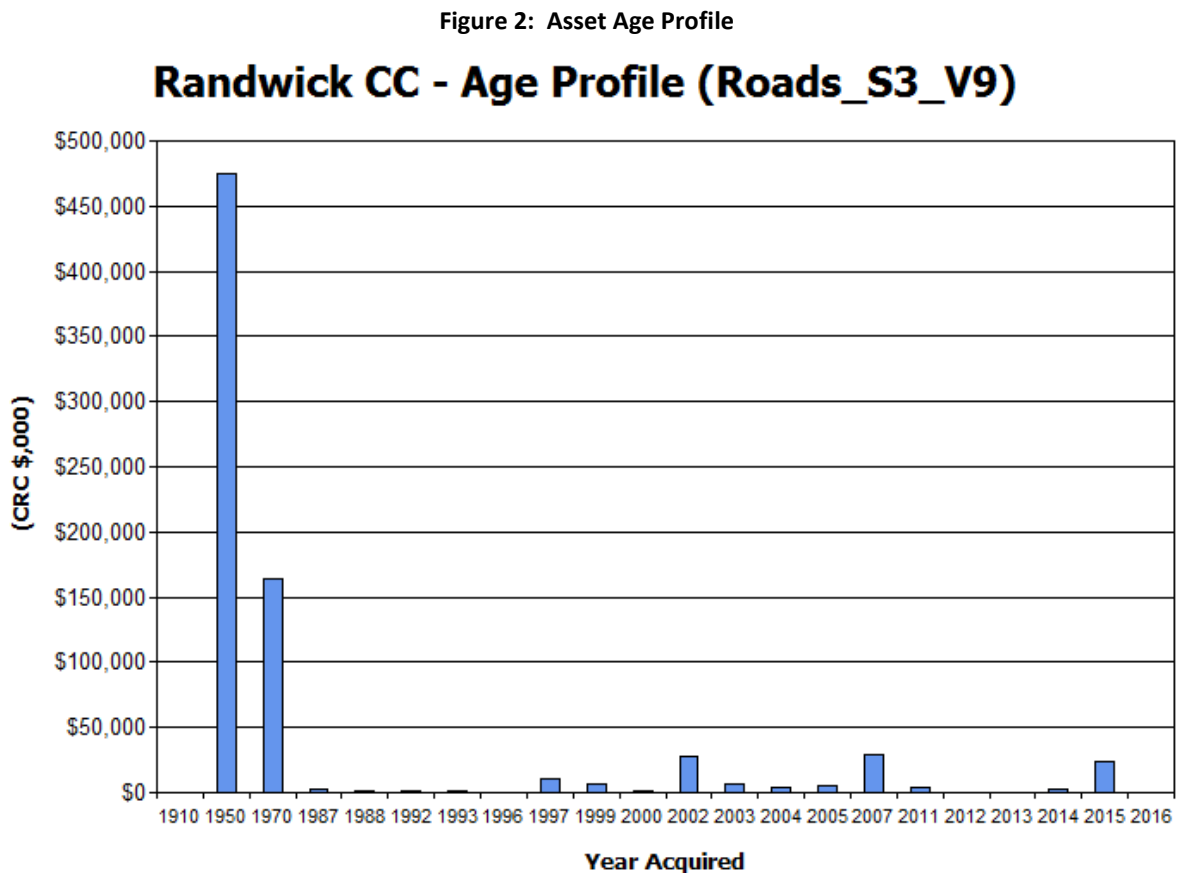
The lifecycle management plan details how the Randwick City Council plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while managing life cycle costs.

5.1 Background Data

5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 2.1.

The age profile of the assets included in this AM Plan are shown in Figure 2.



According to the Figure 2, there were major investments in road infrastructure between 1950 and 1970. Also there were constant investments in new road assets between 2000 and 2009 period. This new asset consists of donated assets from developers, construction of new assets and upgrades to existing asset carried out by the Council as well.

The asset age profile shown is not indicative of the actual age of the assets. The year of construction/acquisition for road assets is not known to any degree of accuracy for most roads. The year of acquisition was therefore determined by considering the anticipated asset life and current condition on the lifecycle deterioration curve for that asset.

5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available.

Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2: Known Service Performance Deficiencies

Location	Service Deficiency
Nil	

The above service deficiencies were identified from consulting the Coordinator Engineering Services.

5.1.3 Asset condition

Currently, 20% of the road conditions are surveyed each year.

The condition profile of our assets is shown in Figure 3.

Figure 3: Asset Condition Profile

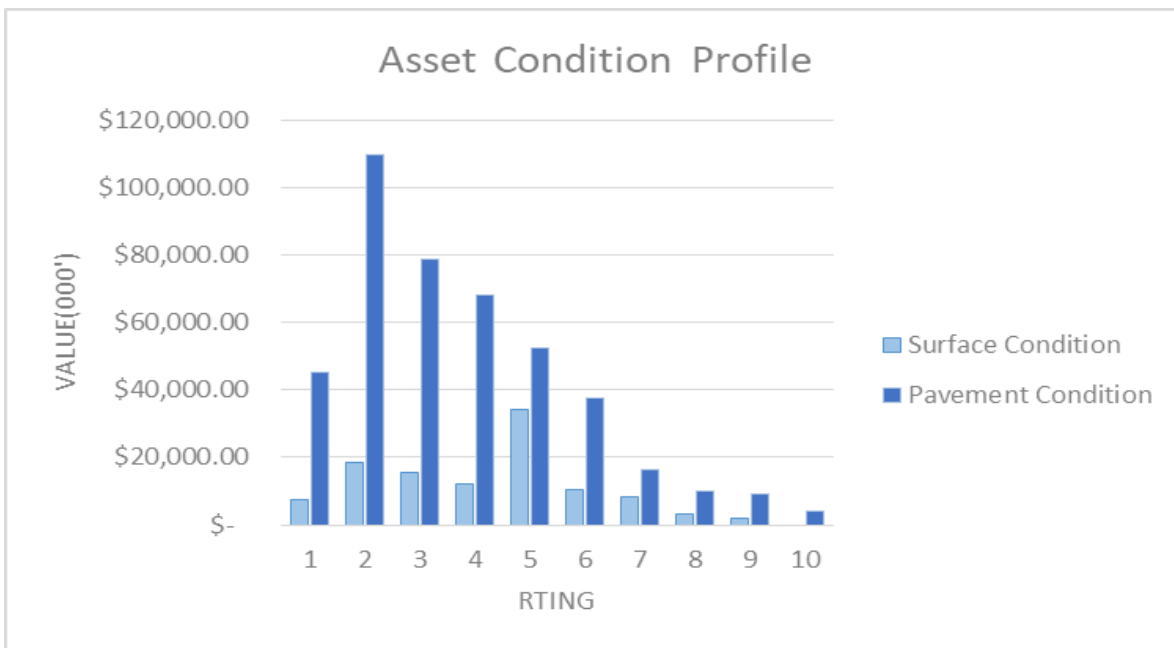


Figure values are in current (real) dollars.

According to the condition profile it is evident that majority of our road infrastructure assets are in fairly good condition.

Condition is measured using a 1 – 10 rating system as detailed in Table 5.1.3.1 to 5.1.3.3

Table 5.1.3.1- Low volume local road surface condition ratings

Low volume local road condition ratings		
1	New	New surfacing less than 2 years old.
2	Very Good	Discoloration. No signs of deteriorations.
3	Good	Loss of fines.
4	Average	Minor environmental cracking to less than 10% of the pavement.
5	Satisfactory	Some raveling with moderate environmental cracking but pavement structurally sound, crocodile cracking <5%.
6	Unsatisfactory	Raveling with extensive environmental cracking. Isolated crocodile cracking with potholes starting to form.
7	Poor	Moderate crocodile cracking and potholes.
8	Consider Reconstruction	Extensive crocodile cracking and numerous potholes requiring regular and extensive maintenance including some patching.
9	Imminent Failure	Extensive cracking and major surface deformations including rutting and shoving. Potholes form regularly and numerous patches carried out.
10	Asset unusable, isolate	Considered failed.

Table 5.1.3.1- High volume local road surface condition ratings

High volume local road condition ratings		
1	New	New surfacing less than 2 years old.
2	Very Good	Discolouration. No signs of deteriorations.
3	Good	Loss of fines.
4	Average	Minor environmental cracking to less than 10% of the pavement.
5	Satisfactory	Some raveling with moderate environmental cracking but pavement structurally sound, crocodile cracking <5%.
6	Unsatisfactory	Raveling with extensive environmental cracking. Isolated crocodile cracking <10% with potholes starting to form.
7	Poor	Moderate crocodile cracking <15% and or environmental cracking potholes.
8	Consider Reconstruction	Extensive crocodile cracking and numerous potholes requiring regular and extensive maintenance including some patching >15%.

9	Imminent Failure	Extensive cracking and major surface deformations including rutting and shoving. Potholes form regularly and numerous patches carried out.
10	Asset unusable, isolate	Considered failed.

Table 5.1.3.1- Pavement condition ratings

Pavement condition ratings		
1	New	New surfacing less than 2 years old.
2	Very Good	Discolouration. No signs of deteriorations.
3	Good	Loss of fines.
4	Average	Some loss of fines. Evident Microscopic cracks to less than 5% of the pavement.
5	Satisfactory	Minor environmental cracking to less than 10% of the pavement.
6	Unsatisfactory	Raveling with moderate environmental cracking but pavement structurally sound, crocodile cracking <5%.
7	Poor	Raveling with extensive environmental cracking. Isolated crocodile cracking with potholes starting to form.
8	Consider Reconstruction	Moderate crocodile cracking and potholes.
9	Imminent Failure	Extensive crocodile cracking and numerous potholes.
10	Asset unusable, isolate	Extensive cracking and major surface deformations including rutting and shoving. Potholes form regularly and numerous patches carried out. Considered failed.

5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, e.g. cleaning, street sweeping, utilities costs etc.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. road patching.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Maintenance expenditure is shown in Table 5.2.1.

Table 5.2.1: Maintenance Expenditure Trends

Year	Maintenance Budget \$
2016	\$ 1,249,903
2017	\$1,515,000
2018	\$1,515,000

Maintenance expenditure levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance expenditure levels are such that they will result in a lesser level of service, the service consequences and service risks have been identified and highlighted in this AM Plan and service risks considered in the Infrastructure Risk Management Plan.

Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017 dollar values (i.e. real values).

Figure 4: Projected Operations and Maintenance Expenditure

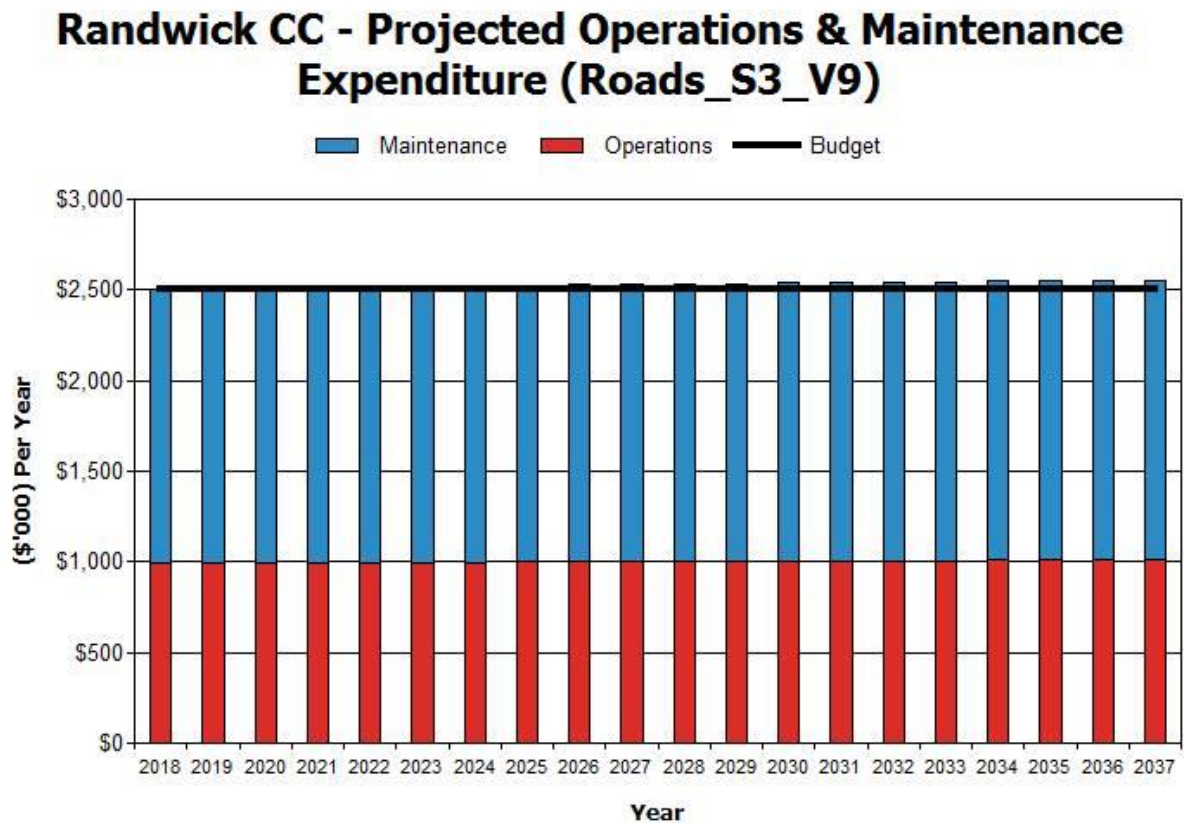


Figure values are in current (real) dollars.

According the Figure 4, Council is allocating adequate funds for road maintenance and operations.

Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded, are to be included in the risk assessment and analysis in the infrastructure risk management plan.

Maintenance is funded from the operating budget where available. This is further discussed in Section 7.

5.3 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset’s design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Assets requiring renewal/replacement are identified from combination of Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year and capital renewal expenditure projections from PARMMS system.

5.3.1 Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate; (e.g. replacing a bridge that has a 5 t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. roughness of a road).⁵

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure;
- Have high use and subsequent impact on users would be greatest;
- Have a total value representing the greatest net value;
- Have the highest average age relative to their expected lives;
- Are identified in the AM Plan as key cost factors;
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.⁶

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 5.3.1.

Table 5.3.1: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Community – Function	30%
Community – Quality	5%
Technical – Condition	10%
Technical – Risk of Failure	40%
Technical – Operating/Maintenance and lifecycle costs	15%
Total	100%

⁵ IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

⁶ Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure required is shown in Figure 5. Note that all amounts are shown in current (real) dollars.

The projected capital renewal and replacement program is shown in Appendix B.

Figure 5: Projected Capital Renewal and Replacement Expenditure

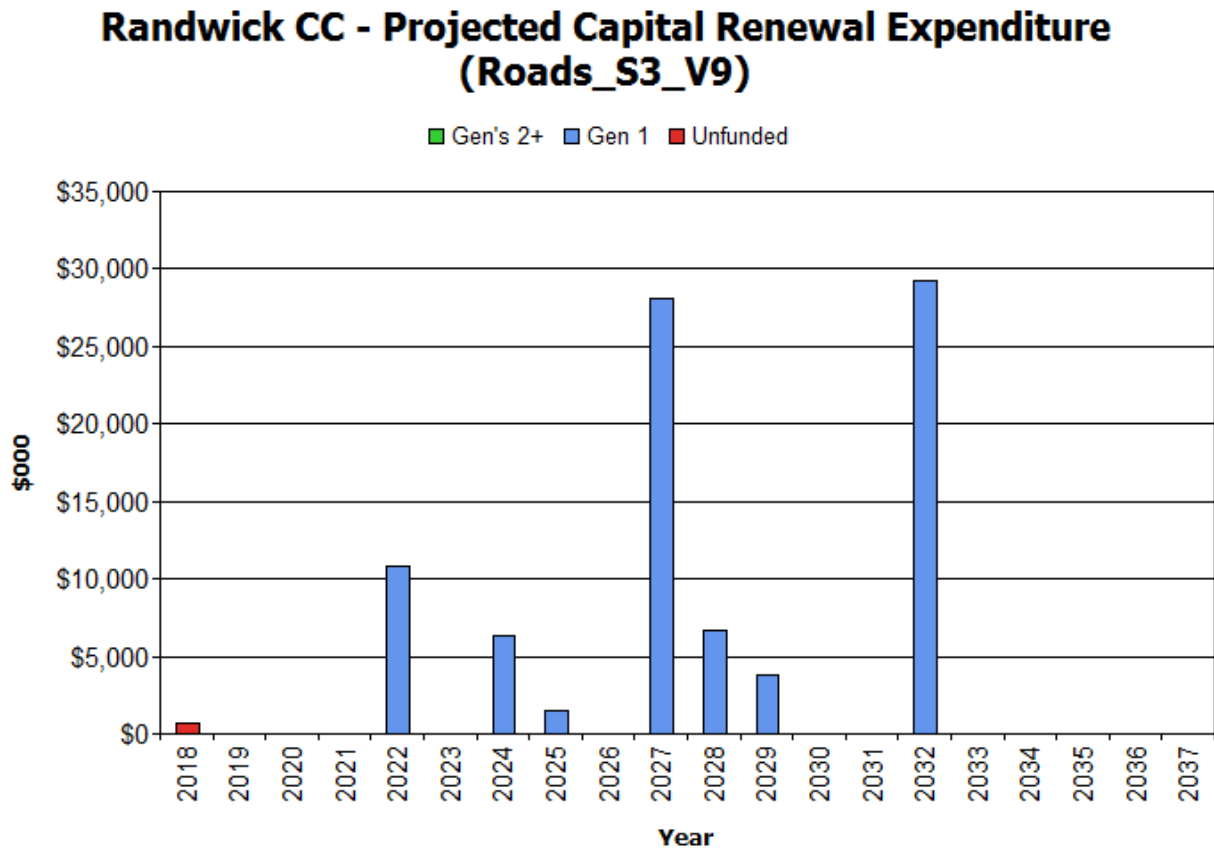


Figure values are in current (real) dollars.

Roads are long life assets and require only a small amount of renewal work during the planning period. However, our budget allocation over and above the projected renewals covered by this Asset Management Plan is required to ensure the future sustainability of this asset class.

Deferred renewal and replacement, i.e. those assets identified for renewal and/or replacement and not scheduled in capital works programs, are to be included in the risk analysis process in the risk management plan.

Renewals and replacement expenditure in the capital works program will be accommodated in the long-term financial plan. This is further discussed in Section 7.

5.3.3 Summary of asset expenditure requirements

The financial projections from this asset plan are shown in Figure 7 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values.

The bars in the graphs represent the anticipated budget needs required to achieve lowest lifecycle costs, the budget line indicates what is currently available. The gap between these informs the discussion on achieving the balance between services, costs and risk to achieve the best value outcome.

Figure 7: Projected Operating and Capital Expenditure

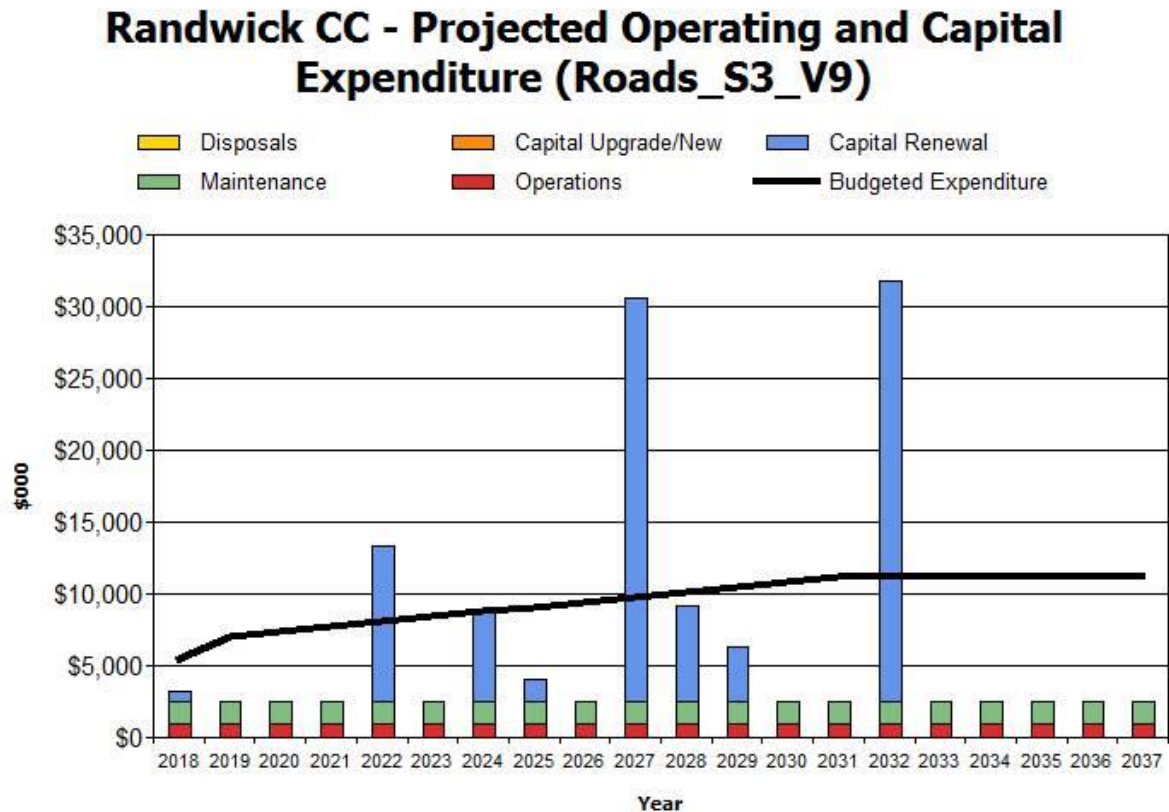


Figure values are in current (real) dollars.

6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2009 as: ‘coordinated activities to direct and control with regard to risk’⁷.

An assessment of risks⁸ associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a ‘financial shock’. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

⁷ ISO 31000:2009, p 2

⁸ 4.3.1 Hazard/Risk Identification, Assessment and Control

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Similarly, critical failure modes are those which have the highest consequences.

Critical assets have been identified, and their typical failure mode and the impact on service delivery are as follows:

Table 6.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Road Pavement	Potholes.	Loss or reduction of service, restricted access, casualties to users or property damage.
Road Pavement	Edge breaks.	Loss or reduction of service, casualties to users or property damage.
Road Pavement	Rutting/Shoving.	Loss or reduction of service, casualties to users or property damage.
Surface	Reduce traction due to Flushing or polishing.	Casualties to users or property damage.

By identifying critical assets and failure modes investigative activities, condition inspection programs, maintenance and capital expenditure plans can be targeted at the critical areas.

6.2 Risk Assessment

Currently, Council carryout annual road inspections. The risk management process used in this project is shown below in Figure 6.2.

It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of the ISO risk assessment standard ISO 31000:2009.

Fig 6.2.1 Road Risk Management Process

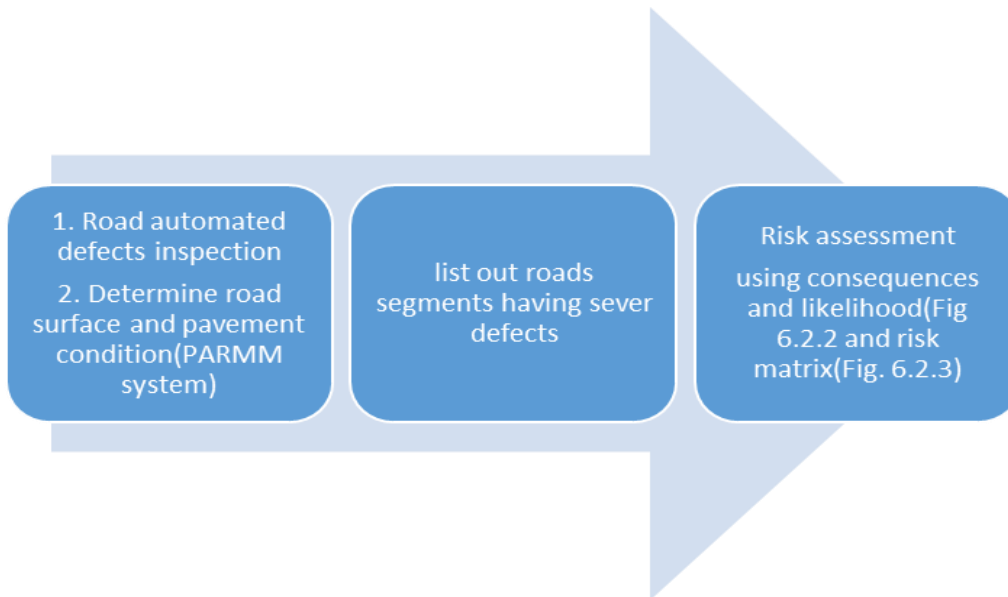


Figure 6.2.2-Risk table

Risk Assessment

Risk Factors	Consequence	Likelihood
<i>Personal Injury</i>		<i>Please note likelihood is based on condition assessment</i>
<i>Financial Implications</i>		
<i>Environmental</i>		
<i>Political</i>		

Consequence	Risk Descriptions
<i>Catastrophic</i>	Death, toxic release off site with detrimental effect, huge financial loss (>\$100,000), sustained comprehensive negative national media coverage with major loss in community trust
<i>Major</i>	Extensive injuries, loss of production capability, off site release with no detrimental effects, major financial loss (>\$50,000 & <\$100,000), Ongoing negative media coverage in local and metro press with minimal community trust
<i>Moderate</i>	Medical treatment required, on-site release contained with outside assistance, high financial loss (>\$10,000 & <\$50,000), Short period negative media coverage with rigorous community discussion
<i>Minor</i>	First aid treatment, on-site release immediately contained, medium financial loss (>\$1000 & <\$10,000), little or no impact on community's perception of Council
<i>Insignificant</i>	No injuries, low financial loss (<\$1000), no effect to normal operations

Figure 6.2.3- Risk matrix

LIKELIHOOD	CONSEQUENCE				
	Insignificant	Minor	Moderate	Major	Catastrophic
	-2	-3	-7	-13	-20
Almost Certain (5)	Medium (10)	High (15)	High (35)	Extreme (65)	Extreme (100)
Likely (4)	Medium (8)	Medium (12)	High (28)	High (52)	Extreme (80)
Possible (3)	Low (6)	Medium (9)	High (21)	High (39)	Extreme (60)
Unlikely (2)	Low (4)	Low (6)	Medium (14)	High (26)	High (40)
Rare (1)	Low (2)	Low (3)	Medium (7)	Medium (13)	High (20)

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

An assessment of risks⁹ associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, ‘financial shock’, or a reduction in service.

Critical risks are those assessed with ‘Very High’ (requiring immediate corrective action) and ‘High’ (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment cost after the selected treatment plan is implemented is shown in Table 6.2. These risks and costs are reported to management and Council.

Table 6.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan
Road	Potholes	Very High	Addressed under road renewal program, preventative maintenance program & responsive maintenance process.
Road	Rutting	Very High	Addressed under road renewal program, preventative maintenance program & responsive maintenance process.
Road	Edge Breaks	High	Addressed under maintenance and capital works programs.
Road	Flushing or Polishing.	High	Addressed under maintenance and capital works programs.
All	Unreliable asset register results in audit qualification and loss of confidence in asset management plan.	High	Asset Data Improvement Programme as part of asset revaluation with compliance monitored by Council’s audit committee.

⁹4.3.1 Hazard/Risk Identification, Assessment and Control

All	Noncompliance with statutory requirements due to insufficient documentation of mandatory processes and reporting.	High	Ensure all compliance requirements are detailed in asset management plans with compliance monitored by Council’s audit committee.
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7. FINANCIAL SUMMARY

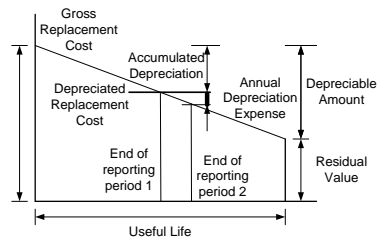
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service, and current and projected future asset performance.

7.1 Financial Statements and Projections

7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets are valued at fair value.

Gross Replacement Cost	\$766,842,000.00
Depreciable Amount	\$766,842,000.00
Depreciated Replacement Cost ¹⁰	\$652,085,000.00
Annual Average Asset Consumption	\$8,653,000.00



7.1.2 Sustainability of service delivery

Two key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the:

- asset renewal funding ratio, and
- medium term budgeted expenditures/projected expenditure (over 10 years of the planning period).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio¹¹ 128 percent

The Asset Renewal Funding Ratio is the most important indicator and indicates that over the next 10 years of the forecasting, we expect to have 128 percent of the funds provided for the optimal renewal and replacement of assets.

Medium term – 10-year financial planning period

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures required to provide an agreed level of service to the community over a 10-year period. This provides input into 10-year financial and funding plans aimed at providing the required services in a sustainable manner.

¹⁰ Also reported as Written Down Value, Carrying or Net Book Value.

¹¹ AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

These projected expenditures may be compared to budgeted expenditures in the 10-year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The projected operations, maintenance and capital renewal expenditure required over the 10-year planning period is \$7,274,000.00 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is \$8,117,000.00 on average per year giving a 10-year surplus of \$843,000.00 per year. This indicates we are planning to fund 112 percent of the projected expenditures to provide the services documented in the asset management plan. This excludes upgrade/new assets.

Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10-year life of the Long-Term Financial Plan.

7.1.3 Projected expenditures for long-term financial plan

Table 7.1.3 shows the projected expenditures for the 10-year long-term financial plan.

Expenditure projections are in 2017 real values.

Table 7.1.3: Projected Expenditures for Long Term Financial Plan (\$000)

Year	Operations (\$000)	Maintenance (\$000)	Capital Renewal	Capital Upgrade/ New	Disposals (\$000)
			\$0	\$0	
2019	\$993	\$1,517	\$0	\$0	\$0
2020	\$994	\$1,518	\$0	\$0	\$0
2021	\$995	\$1,520	\$0	\$0	\$0
2022	\$996	\$1,521	\$10,867	\$0	\$0
2023	\$997	\$1,523	\$0	\$0	\$0
2024	\$998	\$1,524	\$6,358	\$0	\$0
2025	\$999	\$1,526	\$1,478	\$0	\$0
2026	\$1,000	\$1,527	\$0	\$0	\$0
2027	\$1,001	\$1,529	\$28,106	\$0	\$0
2028	\$1,002	\$1,530	\$6,637	\$0	\$0
2029	\$1,003	\$1,532	\$3,773	\$0	\$0
2030	\$1,004	\$1,533	\$0	\$0	\$0
2031	\$1,005	\$1,535	\$0	\$0	\$0
2032	\$1,006	\$1,536	\$29,225	\$0	\$0
2033	\$1,007	\$1,538	\$0	\$0	\$0
2034	\$1,008	\$1,539	\$0	\$0	\$0
2035	\$1,009	\$1,541	\$0	\$0	\$0
2036	\$1,010	\$1,543	\$0	\$0	\$0
2037	\$1,011	\$1,544	\$0	\$0	\$0

7.2 Funding Strategy

Funding for assets is provided from the budget and long-term financial plan.

The financial strategy of the entity determines how funding will be provided, whereas the asset management plan communicates how and when this will be spent, along with the service and risk consequences of differing options.

7.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added.

Additional assets will generally add to the operations and maintenance needs in the longer term, as well as the need for future renewal. Additional assets will also add to future depreciation forecasts.

7.4 Key Assumptions Made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan are:

Table 7.4: Key Assumptions made in AM Plan and Risks of Change

- Asset values and dimensions are correct;
Change to asset values and dimensions will have an effect on resources required to operate, maintain and renew the Road assets.
- 20 percent of Council's road assets will be inspected annually (100 percent every 5 years) and Road asset condition updated accordingly;
Monitoring of change of condition may show change in the asset's useful life which may have a subsequent change of funding required to maintain level of service.
- The estimates used for current rates of renewal will remain constant at current 2017 values for the next 10 years.
Possible increase in renewal costs may reduce level of works budgeted with possible reduction in the road infrastructure service level.

7.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale¹² in accordance with Table 7.5.

¹² IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

Table 7.5: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate $\pm 2\%$
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate $\pm 10\%$
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated $\pm 25\%$
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy $\pm 40\%$
E Unknown	None or very little data held.

The estimated confidence level for, and reliability of data used in this AM Plan is considered to be reliable

8. PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices¹³

8.1.1 Accounting and financial data sources

Council implemented Technology One as its financial system. This system contains a works and assets module in which work orders or tasks can be raised and costing tracked against a particular asset category.

8.1.2 Asset management data sources

Currently, Technology one system is used as asset management data source.

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.1.

Table 8.1: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Continue annual road condition survey.	Engineering services	Asset Engineer/Road Engineer	Annual
2	Establish a strategic asset management system for all infrastructure asset.	Engineering services	Asset Engineer	Not started

¹³ ISO 55000 Refers to this the Asset Management System

3	Review and improvement of maintenance practices.	Engineering services	Asset Engineer	ongoing
4	Improve current capitalisation and disposal process and introduce relevant financial policies.	Finance	Asset Accountant	On going

8.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The AM Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the long -term financial plan.

The AM Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

8.4 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long-term financial plan;
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan;
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans;
- The Asset Renewal Funding Ratio achieving the target of 1.0.

9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

10. APPENDICES

- Appendix A Projected 10-year Capital Renewal and Replacement Works Program
- Appendix B LTFP Budgeted Expenditures Accommodated in AM Plan

Appendix A Projected 10-year Capital Renewal and Replacement Works Program

Asset ID	Sub Category	Asset Name	From	To	Rem Life (Years)	Useful Life (Years)
FR000398	Pavement	Bent Lane	French Street	The End	-1	100
RD001363	Surface	Bapaume Parade	Eastern Road	The End	-1	25
RD001755	Surface	Bell Street	Boyce Road	The End	-1	25
RD002212	Surface	Bent Lane	French Street	The End	-1	25
RD003059	Surface	Bundock Lane	Ellen Street	Canberra Street	-1	25
RD014848	Surface	Centennial Avenue	Clovelly Road	Width Change	-1	25
RD004936	Surface	Day Lane	Borrodale Road	See Street	-1	25
RD004946	Surface	Day Lane	See Street	Strachan Street	-1	25
RD005894	Surface	Evelyn Street	Denning Street	Malabar Road	-1	25
RD006309	Surface	Flower Lane	Haig Street	French Street	-1	25
RD006299	Surface	Flower Street	Maroubra Road	Haig Street	-1	25
RD006582	Surface	Gainford Avenue	Jersey Road	O'Connell Avenue	-1	25
RD014718	Surface	Glen Lane	Carrington Road	Glen Avenue	-1	25
RD007168	Surface	Hall Street	Lasseter Avenue	Hastings Avenue	-1	25
RD008396	Surface	Judge Lane	Judge Street	Heath Street	-1	25
RD014527	Surface	Meehan Lane	The End	Lawson Street	-1	25

RD011113	Surface	Oberon Street	Perouse Road	Canberra Street	-1	25
RD012057	Surface	Rainbow Lane	Helena Street	Oberon Street	-1	25
RD012067	Surface	Rainbow Lane	Oberon Street	Howard Street	-1	25
RD014517	Surface	Susan Lane	Fern Street	Barry Street	-1	25
RD002707	Surface	Tram Lane	Alison Road	Church Street	-1	25
RD002161	Surface	Unnamed Lane Chifley No 1	Burke Street	The End	-1	25
RD013334	Surface	Vale Street	Arden Street	The End	-1	25
RD013485	Surface	Wallace Street	Botany Street	Width Change	-1	25
RD015128	Surface	Weller Lane	Hannan Street	The End	-1	25
RD013760	Surface	Wild Street	Fitzgerald Avenue	Donovan Avenue	-1	25
RD014597	Surface	Wood Lane	Wood Lane	Wood Street	-1	25
RD014063	Surface	Wurley Avenue	Court Avenue	The End	-1	25
RD014093	Surface	Yorktown Parade	Malabar Road	New Orleans Crescent	-1	25
RD000121	Surface	Adina Avenue	Canara Avenue	Elaroo Avenue	4	25
RD000131	Surface	Adina Avenue	Elaroo Avenue	Adina Way	4	25
RD014153	Surface	Aeolia Lane	Aeolia Street	The End	4	25
RD000151	Surface	Ahearn Avenue	Alexandria Parade	The End	4	25
RD000171	Surface	Albert Street	Pitt Street	Avoca Street	4	25
RD000181	Surface	Albi Place	Judge Street	The End	4	25
RD000366	Surface	Alison Lane	The End	Arcadia Lane	4	25

RD000516	Surface	Anderson Street	Bunnerong Road	Hayward Street	4	25
RD000536	Surface	Andrew Street	Boundary Street	Surfside Avenue	4	25
RD001085	Surface	Anthony Lane	Havelock Avenue	Dudley Street	4	25
RD014607	Surface	Anthony Lane	Sharp Street	Dive Street	4	25
RD000814	Surface	Apsley Lane	Jacques Street	Anzac Parade	4	25
RD004104	Surface	Arcadia Lane	Arcadia Street	Alison Road	4	25
RD001035	Surface	Arthur Lane	Silver Street	Waratah Avenue	4	25
RD001045	Surface	Arthur Lane	Waratah Avenue	Arthur Street	4	25
RD001055	Surface	Ascot Street	Anzac Parade	Doncaster Avenue	4	25
RD001282	Surface	Baird Avenue	Beauchamp Road	Perry Street	4	25
RD001343	Surface	Balfour Lane	Balfour Road	Kensington Road	4	25
RD001333	Surface	Balfour Road	Todman Avenue	Addison Street	4	25
RD004996	Surface	Barrett Place	Gilderthorpe Avenue	The End	4	25
RD001553	Surface	Bay Street	Clifford Street	The End	4	25
RD001623	Surface	Beach Lane	Alison Road	The End North	4	25
RD001583	Surface	Beach Street	The End	Arcadia Street	4	25
RD014184	Surface	Beatty Lane	Beatty Street	The End	4	25
RD001643	Surface	Beauchamp Road	Broome Street	Malabar Road	4	25
RD001715	Surface	Beaumont Avenue	Sackville Street	Bond Street	4	25
RD001745	Surface	Bell Street	Storey Street	Boyce Road	4	25

RD001775	Surface	Bella Street	Pine Street	The End	4	25
RD001806	Surface	Belmore Road	Avoca Street	Coogee Bay Road	4	25
RD002057	Surface	Bernie Kelly Drive	Marine Parade	The End	4	25
RD001947	Surface	Bligh Street	Franklin Street	Burke Street	4	25
RD002037	Surface	Borrodale Road	Cottenham Avenue	Houston Road	4	25
RD002347	Surface	Botany Street	Anzac Parade	Sturt Street	4	25
RD002407	Surface	Botany Street	Arthur Street	Alison Road	4	25
RD002397	Surface	Botany Street	High Street	Arthur Street	4	25
RD002417	Surface	Bougainville Court	Portland Crescent	The End	4	25
RD002467	Surface	Bow Lane	Botany Lane	Kennedy Street	4	25
RD002537	Surface	Boyce Road	Anzac Parade	Bruce Bennetts Place	4	25
RD002637	Surface	Brandon Street	Arden Street	Width Change	4	25
RD002717	Surface	Bridges Street	Broome Street	Malabar Road	4	25
RD002947	Surface	Bruce Bennetts Place	Boyce Road	Piccadilly Place	4	25
RD003348	Surface	Byrne Avenue	Moverly Road	Johnston Parade	4	25
RD003418	Surface	Caley Street	Wassell Street	Burke Street	4	25
RD003438	Surface	Calga Avenue	Bilga Crescent	Bilga Crescent	4	25
RD003489	Surface	Canara Avenue	Anzac Parade	Adina Avenue	4	25
RD003509	Surface	Canara Avenue	Oorana Avenue	Yarra Road	4	25
RD014577	Surface	Carey Lane	Carrington Road	Douglas Lane	4	25

RD001816	Surface	Carlton Lane	Abbotford Street	Abbotford Street	4	25
RD003640	Surface	Carr Street	Arden Street	Brook Street	4	25
RD003660	Surface	Carr Street	Mount Street	Byron Street	4	25
RD003803	Surface	Carter Lane	Castle Lane	The End	4	25
RD003823	Surface	Castle Lane	Clovelly Road	Carter Street	4	25
RD014858	Surface	Centennial Avenue	Width Change	The End	4	25
RD003853	Surface	Challis Street	Wentworth Street	Earl Street	4	25
RD003883	Surface	Chapel Street	Dutruc Street	Frenchmans Road	4	25
RD003873	Surface	Chapel Street	St Marks Road	Dutruc Street	4	25
RD003953	Surface	Chepstow Street	Stanley Street	Stephen Street	4	25
RD004114	Surface	Clifford Street	The End	Mount Street	4	25
RD004134	Surface	Clifton Road	Boundary Street	Burnie Street	4	25
RD004536	Surface	Court Avenue	Edward Avenue	Borrodale Road	4	25
RD014394	Surface	Dacre Lane	Raglan Street	Ireton Street	4	25
RD004736	Surface	Dangar Lane	Darley Road	White Street	4	25
RD003278	Surface	Darley Lane	Clovelly Road	Avoca Street	4	25
RD014364	Surface	Darling Lane	Darling Street	The End	4	25
RD004846	Surface	Daunt Avenue	Knowles Avenue	Bunnerong Road	4	25
RD004896	Surface	Day Avenue	Cottenham Avenue	Mooramie Avenue	4	25
RD004886	Surface	Day Avenue	Eastern Avenue	Cottenham Avenue	4	25

RD004956	Surface	Day Lane	Strachan Street	Barker Street	4	25
RD005006	Surface	Dewey Court	Portland Crescent	The End	4	25
RD005016	Surface	Dick Street	Carrington Road	Glebe Street	4	25
RD005036	Surface	Dine Lane	Avoca Lane	Barker Street	4	25
RD005299	Surface	Douglas Lane	Carey Lane	Douglas Street	4	25
RD005399	Surface	Duke Street	Todman Avenue	Balfour Road	4	25
RD005500	Surface	Dundas Street	Neptune Street	Oberon Street	4	25
RD005530	Surface	Dutruc Street	Alison Road	Rae Street	4	25
RD005610	Surface	Earl Lane	Stephen Street	Challis Street	4	25
RD015068	Surface	Elizabeth Lane	Elizabeth Street	Botany Street	4	25
RD005884	Surface	Evans Street	Govett Street	Darley Road	4	25
RD005924	Surface	Eyre Street	Brisbane Street	Dampier Street	4	25
RD005934	Surface	Eyre Street	Dampier Street	Forrest Street	4	25
RD015048	Surface	Ferguson Lane	Ferguson Street	The End	4	25
RD005974	Surface	Ferguson Street	Maroubra Road	Wise Street	4	25
RD006145	Surface	Fischer Lane	Fischer Street	Broadbent Street	4	25
RD006199	Surface	Fitzgerald Lane	Fitzgerald Avenue	Bridges Street	4	25
RD006229	Surface	Flood Street	Burnie Street	Clovelly Road	4	25
RD006439	Surface	Frances Lane	Frances Street	The End	4	25
RD006469	Surface	Franklin Street	Prince Edward Street	The End	4	25

RD006592	Surface	Gainford Avenue	O'Connell Avenue	Beauchamp Road	4	25
RD006612	Surface	Gale Road	Royal Street	Hannan Street	4	25
RD006906	Surface	Glebe Street	The End	Carrington Road	4	25
RD006957	Surface	Goodwood Street	Anzac Parade	Doncaster Avenue	4	25
RD012077	Surface	Goora Street	Anzac Parade	The End	4	25
RD007038	Surface	Gray Street	St Luke Street	Heath Street	4	25
RD007058	Surface	Greenwood Avenue	Evelyn Street	Malabar Road	4	25
RD007158	Surface	Haig Lane	Haig Street	Maroubra Lane	4	25
RD007309	Surface	Harbourne Lane	Forsyth Street	Harbourne Road	4	25
RD007449	Surface	Helena Lane	Helena Street	Rainbow Lane	4	25
RD007550	Surface	Higgs Street	Oberon Street	Dudley Street	4	25
RD007560	Surface	High Street	Anzac Parade	Ajc Gate	4	25
RD007620	Surface	Hill Lane	Hill Street	Brook Street	4	25
RD007935	Surface	Howard Lane	Howard Street	Avoca Lane	4	25
RD007945	Surface	Howard Street	Avoca Street	Titania Street	4	25
RD007975	Surface	Howe Street	Bay Parade	Prince Edward Street	4	25
RD002917	Surface	Huddart Lane	Dangar Street	Dangar Lane	4	25
RD008006	Surface	Hume Street	Burke Street	Mitchell Street	4	25
RD008106	Surface	Ireton Street	Austral Street	Prince Edward Street	4	25
RD008156	Surface	Isis Lane	Irvine Street	Botany Street	4	25

RD008356	Surface	Jordan Lane	The End	Shirley Crescent	4	25
RD008406	Surface	Judge Lane	Heath Street	The End	4	25
RD008477	Surface	Kelly Street	Kelly Lane	The End	4	25
RD002607	Surface	Kennedy Lane	Norton Street	Oval Lane	4	25
RD008591	Surface	Kenny Avenue	Anzac Parade	Mawson Parade	4	25
RD008885	Surface	Larose Avenue	Franklin Street	Franklin Street	4	25
RD009066	Surface	Lindsay Street	Adina Avenue	Oorana Avenue	4	25
RD009096	Surface	Lion Lane	Oberon Street	The End	4	25
RD009440	Surface	Malabar Road	Rainbow Street	Arden Street	4	25
RD009540	Surface	Manson Place	Simeon Street	Knox Street	4	25
RD009580	Surface	Marine Parade	The End	Inman Street	4	25
RD009670	Surface	Maroubra Road	Duncan Street	Malabar Road	4	25
RD014314	Surface	Mason Street	Royal Street	Hannan Street	4	25
RD009308	Surface	Mckenzie Avenue	Little Bay Road	Anzac Parade	4	25
RD009812	Surface	Mears Avenue	Avoca Street	Ada Street	4	25
RD011193	Surface	Meeks Lane	Middle Street	Meeks Street	4	25
RD009842	Surface	Meeks Street	Anzac Parade	Harbourne Road	4	25
RD009882	Surface	Meeks Street	Kennedy Street	Botany Street	4	25
RD009982	Surface	Menin Road	Combles Parade	Pozieres Avenue	4	25
RD010073	Surface	Middle Street	Kennedy Street	Botany Street	4	25

RD010263	Surface	Minya Avenue	Court Avenue	The End	4	25
RD010273	Surface	Mitchell Street	Franklin Street	Burke Street	4	25
RD010303	Surface	Molloy Avenue	Fowler Crescent	Tucabia Street	4	25
RD010554	Surface	Mount Lane	Dolphin Street	Coogee Bay Road	4	25
RD010742	Surface	Namoi Road	Clarence Street	Paterson Street	4	25
RD010832	Surface	Neptune Street	Wolseley Road	Beach Street	4	25
RD010852	Surface	Nevorie Crescent	Storey Street	Royal Street	4	25
RD012651	Surface	Noora Avenue	Woomera Road	The End	4	25
RD010942	Surface	Norbar Lane	Kennedy Street	Norton Lane	4	25
RD014457	Surface	Norfolk Lane	Franklin Street	Car Park	4	25
RD011133	Surface	Oberon Lane	Oberon Street	Howard Street	4	25
RD011153	Surface	Ocean Lane	Warner Avenue	Park Lane	4	25
RD011234	Surface	O'Sullivan Avenue	Paine Street	Nagle Avenue	4	25
RD011255	Surface	Oswald Street	Courland Street	Clyde Street	4	25
RD011265	Surface	Oval Lane	Willis Street	Botany Street	4	25
RD011472	Surface	Park Lane	Campbell Street	Northumberland Street	4	25
RD011462	Surface	Park Lane	Park Street	Campbell Street	4	25
RD011542	Surface	Pauling Avenue	Ritchard Avenue	Alison Road	4	25
RD011602	Surface	Perouse Road	Barker Street	St Pauls Street	4	25
RD011592	Surface	Perouse Road	Howard Street	Barker Street	4	25

RD011582	Surface	Perouse Road	Oberon Street	Howard Street	4	25
RD011784	Surface	Pozieres Avenue	Knowles Avenue	Menin Road	4	25
RD011834	Surface	Prince Edward Street	Anzac Parade	Ireton Street	4	25
RD011864	Surface	Prince Edward Street	Napier Street	Bilga Crescent	4	25
RD011804	Surface	Prince Street	King Street	Cowper Street	4	25
RD014133	Surface	Rae Lane	Rae Street	The End	4	25
RD012047	Surface	Rainbow Lane	Rainbow Street	Helena Street	4	25
RD012007	Surface	Rainbow Street	Hendy Avenue	Mount Street	4	25
RD014467	Surface	Ravenswood Lane	Searle Avenue	Carrington Road	4	25
RD014758	Surface	Rigney Lane	Rigney Avenue	Avoca Street	4	25
RD012168	Surface	Ritchard Avenue	Mount Street	Pauling Avenue	4	25
RD008456	Surface	Roads			4	25
RD005762	Surface	Roads			4	25
RD012230	Surface	Roma Avenue	Kensington Road	Doncaster Avenue	4	25
RD012380	Surface	Salisbury Road	Boronia Street	Balfour Road	4	25
RD005329	Surface	Samuel Terry Avenue	Todman Avenue	The End	4	25
RD012400	Surface	Scott Lane	Scott Street	Tyrwhitt Street	4	25
RD012470	Surface	See Lane	Houston Road	Day Lane	4	25
RD012480	Surface	Severn Street	Marine Parade	The End	4	25
RD012510	Surface	Shaw Avenue	Tressidder Avenue	Goodrich Avenue	4	25

RD014658	Surface	Sims Lane	New Orleans Crescent	Minneapolis Crescent	4	25
RD012921	Surface	St Marks Road	The End	Frenchmans Road	4	25
RD012681	Surface	Stephen Lane	Wentworth Street	The End	4	25
RD014497	Surface	Susan Lane	Fewings Street	Knox Street	4	25
RD012991	Surface	Tay Street	Alison Road	Anzac Parade	4	25
RD013072	Surface	The Causeway	First Avenue	Maroubra Road	4	25
RD013062	Surface	The Causeway	Torrington Road	First Avenue	4	25
RD013152	Surface	Titania Lane	Rainbow Lane	The End	4	25
RD013364	Surface	Victoria Street	Albert Street	Alison Road	4	25
RD013374	Surface	Victoria Street	Howe Street	Napier Street	4	25
RD013394	Surface	Victoria Street	Raglan Street	Ireton Street	4	25
RD013475	Surface	Walker Avenue	Melrose Parade	Clovelly Road	4	25
RD014204	Surface	Wallace Lane	Wallace Street	Rainbow Street	4	25
RD011572	Surface	Wild Lane	Kingsford Street	Wild Street	4	25
FR011651	Surface	Wild Lane	Wild Street	The End	4	25
RD013913	Surface	Wills Avenue	Macquarie Street	Forrest Street	4	25
RD015108	Surface	Winchester Lane	Pacific Street	Winchester Road	4	25
RD014033	Surface	Woomera Road	Little Bay Road	Bunnerong Road	4	25
RD000101	Surface	Addison Street	Kensington Road	Anzac Parade	6	25
RD000191	Surface	Albion Street	Carrington Road	Pine Street	6	25

RD000241	Surface	Alison Road	Beach Street	Arden Street	6	25
RD000281	Surface	Alison Road	Mount Street	Carrington Road	6	25
RD001115	Surface	Athol Street	Denning Street	Malabar Road	6	25
RD001125	Surface	Austral Street	Anzac Parade	Bilga Crescent	6	25
RD001293	Surface	Baker Street	Dowling Street	Milroy Avenue	6	25
RD001323	Surface	Balfour Road	Duke Street	Todman Avenue	6	25
RD001433	Surface	Barker Street	Anzac Parade	Willis Street	6	25
RD001483	Surface	Barker Street	Avoca Street	Perouse Road	6	25
RD001423	Surface	Barker Street	Houston Road	Anzac Parade	6	25
RD001473	Surface	Barker Street	Jane Street	Avoca Street	6	25
RD001443	Surface	Barker Street	Willis Street	Kennedy Street	6	25
RD002557	Surface	Boyce Road	Hannan Street	Royal Street	6	25
RD002567	Surface	Boyce Road	Royal Street	Bunnerong Road	6	25
RD002547	Surface	Boyce Road	The End	Hannan Street	6	25
RD002667	Surface	Bream Street	Arden Street	Brook Street	6	25
RD002657	Surface	Bream Street	Beach Street	Arden Street	6	25
RD002837	Surface	Brook Street	Bream Street	Alison Road	6	25
RD002807	Surface	Brook Street	Carr Street	Coogee Bay Road	6	25
RD002817	Surface	Brook Street	Coogee Bay Road	Dolphin Street	6	25
RD003009	Surface	Bundock Street	Malabar Road	Hendy Avenue	6	25

RD003519	Surface	Canberra Street	Bundock Street	Rainbow Street	6	25
RD003539	Surface	Canberra Street	Oberon Street	Howard Street	6	25
RD003529	Surface	Canberra Street	Rainbow Street	Oberon Street	6	25
RD003973	Surface	Chester Avenue	Minneapolis Crescent	Fitzgerald Avenue	6	25
RD004074	Surface	Clarence Street	Franklin Street	Namoi Road	6	25
RD004174	Surface	Clovelly Road	Darley Road	Earl Street	6	25
RD004264	Surface	Clovelly Road	Donnellan Circuit	Victory Street	6	25
RD004184	Surface	Clovelly Road	Earl Street	Avoca Street	6	25
RD004224	Surface	Clovelly Road	Fern Street	Arden Street	6	25
RD004254	Surface	Clovelly Road	Flood Street	Donnellan Circuit	6	25
RD004456	Surface	Cooper Street	Alma Road	Boyce Road	6	25
RD004436	Surface	Cooper Street	Metcalf Street	Gale Road	6	25
RD004486	Surface	Cottenham Avenue	Gardeners Road	Day Avenue	6	25
RD004726	Surface	Dangar Street	White Street	Darley Road	6	25
RD005096	Surface	Dolphin Street	Brook Street	Mount Street	6	25
RD005126	Surface	Dolphin Street	Carrington Road	Judge Street	6	25
RD005076	Surface	Dolphin Street	The End	Arden Street	6	25
RD005279	Surface	Douglas Street	Fern Street	The End	6	25
RD005349	Surface	Dudley Street	Arden Street	Brook Street	6	25
RD005339	Surface	Dudley Street	Beach Street	Arden Street	6	25

RD005379	Surface	Dudley Street	Byron Street	Carrington Road	6	25
RD005389	Surface	Dudley Street	Carrington Road	Coogee Bay Road	6	25
RD005369	Surface	Dudley Street	Mount Street	Byron Street	6	25
RD005449	Surface	Duncan Street	Malabar Road	Maxwell Avenue	6	25
RD005460	Surface	Duncan Street	Maxwell Avenue	Maroubra Road	6	25
RD005814	Surface	Elsmere Street	Goodwood Street	Carlton Street	6	25
RD005904	Surface	Everett Street	Storey Street	Gale Road	6	25
RD006004	Surface	Ferguson Street	Wade Street	Murray Street	6	25
RD006045	Surface	Fern Street	Douglas Street	Albion Street	6	25
RD006349	Surface	Forsyth Street	Barker Street	Middle Street	6	25
RD006379	Surface	Fowler Crescent	Macleay Street	Storey Street	6	25
RD006429	Surface	Frances Street	The Avenue	Avoca Street	6	25
RD006449	Surface	Franklin Street	Bunnerong Road	Blaxland Street	6	25
RD014748	Surface	Ada Lane	Mears Avenue	The End	7	25
RD014617	Surface	Anthony Lane	Dive Street	The End	7	25
RD000844	Surface	Arcadia Street	Beach Street	Arden Street	7	25
RD002276	Surface	Botany Lane	Barker Street	Middle Street	7	25
RD002296	Surface	Botany Lane	Meeks Street	The End	7	25
RD002286	Surface	Botany Lane	Middle Street	Meeks Street	7	25
RD002387	Surface	Botany Street	Barker Street	High Street	7	25

RD002977	Surface	Budd Avenue	Dwyer Avenue	Dawes Street	7	25
RD003630	Surface	Carr Street	Beach Street	Arden Street	7	25
RD012209	Surface	Castle Lane	Carter Street	Stephen Street	7	25
RD015058	Surface	Centre Lane	Kennedy Street	Botany Lane	7	25
RD004154	Surface	Clisby Way	Finucane Crescent	Truscott Avenue	7	25
RD015028	Surface	Clove Lane	Darley Lane	Earl Street	7	25
RD014404	Surface	Dacre Lane	Ireton Street	The End	7	25
RD004746	Surface	Dangar Lane	White Street	Tramway Lane	7	25
RD014728	Surface	Dowling Lane	Ingram Street	The End	7	25
RD002078	Surface	Duncan Lane	Duncan Street	The End	7	25
RD015018	Surface	East Lane	Canberra Lane	The End	7	25
RD014988	Surface	Fern Lane	Susan Lane	Clift Lane	7	25
RD006794	Surface	Gardeners Lane	Bruce Street	Houston Road	7	25
RD007008	Surface	Gordon Avenue	Moore Street	The End	7	25
RD007028	Surface	Govett Lane	Govett Street	Dangar Street	7	25
RD007188	Surface	Hamilton Street	Alison Road	Division Street	7	25
RD014143	Surface	Hay Lane	Hay Street	Barker Street	7	25
RD007835	Surface	Hooper Lane	Hooper Street	Gilderthorpe Avenue	7	25
RD007895	Surface	Houston Lane	Barker Street	Strachan Street	7	25
RD007885	Surface	Houston Lane	Day Avenue	Barker Street	7	25

RD008436	Surface	Kara Lane	Howard Street	Avoca Lane	7	25
RD003550	Surface	Kelso Lane	Cowper Street	The End	7	25
RD006978	Surface	Kenneth Lane	Kennedy Street	Botany Lane	7	25
RD009076	Surface	Lingard Street	Alison Road	Rae Street	7	25
RD009400	Surface	Macquarie Street	Mitchell Street	The End	7	25
RD010902	Surface	Nicol Lane	Nicol Avenue	Maroubra Road	7	25
RD011379	Surface	Palmer Street	Close Street	Bunya Parade	7	25
RD008036	Surface	Pavement/Walkway/Steps	Malabar Road	Garie Place	7	25
RD015098	Surface	Pepper Lane	Thorpe Street	The End	7	25
RD012118	Surface	Raymond Avenue	Mccauley Street	Mccauley Street	7	25
RD007128	Surface	Rubie Lane	Nix Avenue	Adams Avenue	7	25
RD012941	Surface	St Pauls Street	Avoca Street	Perouse Road	7	25
RD011326	Surface	Strachan Lane	Houston Road	Day Lane	7	25
RD010932	Surface	Sturt Lane	Sturt Street	Botany Road	7	25
RD013001	Surface	Tay Lane	Abbotford Lane	Anzac Parade	7	25
RD013720	Surface	Wentworth Lane	Wentworth Street	Dangar Lane	7	25
RD012801	Surface	West Lane	Rainbow Lane	The End	7	25
RD013883	Surface	Willis Lane	Rainbow Street	Meeks Street	7	25
RD013853	Surface	Willis Street	Barker Street	Middle Street	7	25
RD000446	Surface	Abbe Receveur Place	Grose Street	The End	9	25

RD000001	Surface	Abbey Street	Alison Road	Frances Street	9	25
RD000051	Surface	Abbot Street	Mount Street	Melody Street	9	25
RD000041	Surface	Abbotford Lane	Brodie Avenue	Abbotford Lane East	9	25
RD000031	Surface	Abbotford Lane East	Abbotford Street	Alison Road	9	25
RD000021	Surface	Abbotford Lane West	Abbotford Street	Alison Road	9	25
RD000071	Surface	Ada Street	Don Juan Avenue	The End	9	25
RD000111	Surface	Adina Avenue	Yarra Road	Canara Avenue	9	25
RD000161	Surface	Ainslie Street	Paton Street	Avoca Street	9	25
RD000221	Surface	Alfreda Street	Arden Street	Brook Street	9	25
RD000251	Surface	Alison Road	Arden Street	Brook Street	9	25
RD000396	Surface	Alma Road	Anzac Parade	Garden Street	9	25
RD000426	Surface	Alma Road	Flower Street	Width Change	9	25
RD000526	Surface	Anderson Street	Hayward Street	Apsley Avenue	9	25
RD000546	Surface	Anthony Street	Jersey Road	Anthony Lane	9	25
RD002233	Surface	Anzac Parade - Side Road 1	Canara Avenue	Anzac Parade	9	25
RD003167	Surface	Anzac Parade - Side Road 2	Anzac Parade	The End	9	25
RD000804	Surface	Apsley Lane	Apsley Avenue	Jacques Street	9	25
RD000854	Surface	Arcadia Street	Arden Street	Brook Street	9	25
RD000834	Surface	Arcadia Street	Major Street	Beach Street	9	25
RD000874	Surface	Archer Place	Cooper Street	The End	9	25

RD001025	Surface	Arthur Street	Botany Street	Belmore Road	9	25
RD001015	Surface	Arthur Street	Wansey Road	Botany Street	9	25
RD001075	Surface	Asher Street	Waltham Street	Havelock Avenue	9	25
RD001105	Surface	Astoria Circuit	Chester Avenue	Chester Avenue	9	25
RD001145	Surface	Australia Avenue	Bunnerong Road	Mccauley Street	9	25
RD001251	Surface	Avoca Lane	Kara Street	Dine Lane	9	25
RD001272	Surface	Baden Street	Beach Street	Park Area	9	25
RD001313	Surface	Balfour Road	Salisbury Road	Duke Street	9	25
RD001513	Surface	Barry Street	Clovelly Road	Greville Street	9	25
RD001523	Surface	Bass Street	Anzac Parade	Sturt Street	9	25
RD001533	Surface	Battery Street	Beach Street	Tower Street	9	25
RD001573	Surface	Beach Street	Neptune Street	Carr Street	9	25
RD001563	Surface	Beach Street	Oberon Street	Neptune Street	9	25
RD001633	Surface	Beatty Street	Fitzgerald Avenue	Byng Street	9	25
RD001725	Surface	Bedford Place	Denning Street	Malabar Road	9	25
RD001735	Surface	Bega Avenue	Woomera Road	Mirrabooka Crescent	9	25
RD001847	Surface	Berwick Street	Mount Street	The End	9	25
RD001877	Surface	Bilga Crescent	Calga Avenue	Anzac Parade	9	25
RD001897	Surface	Bishops Avenue	Clovelly Road	Douglas Street	9	25
RD000864	Surface	Black Lion Place	Brompton Road	The End	9	25

RD001917	Surface	Blaxland Street	Lawson Street	Franklin Street	9	25
RD001937	Surface	Bligh Place	Clovelly Road	The End	9	25
RD001957	Surface	Bloomfield Street	Denning Street	The End	9	25
RD001997	Surface	Bond Street	Marine Parade	Bona Vista Avenue	9	25
RD002027	Surface	Boronia Street	Duke Street	Anzac Parade	9	25
RD002367	Surface	Botany Street	Rainbow Street	Middle Street	9	25
RD002357	Surface	Botany Street	Sturt Street	Rainbow Street	9	25
RD002457	Surface	Bowen Place	Broome Street	The End	9	25
RD002497	Surface	Boyce Road	Bell Street	Flower Street	9	25
RD002507	Surface	Boyce Road	Flower Street	Cooper Street	9	25
RD002627	Surface	Bradley Lane	Bradley Street	Botany Street	9	25
RD000486	Surface	Brompton Road	The Serpentine	York Place	9	25
RD002827	Surface	Brook Street	Dolphin Street	Bream Street	9	25
RD002877	Surface	Broome Street	Brown Road	The End	9	25
RD003049	Surface	Bundock Lane	Hendy Avenue	Ellen Street	9	25
RD003208	Surface	Burbong Street	Anzac Parade	Avoca Street	9	25
RD003218	Surface	Burke Street	Franklin Street	Mitchell Street	9	25
RD003248	Surface	Burnie Street	Clovelly Road	Arden Street	9	25
RD003258	Surface	Burton Street	Prince Street	Church Street	9	25
RD003308	Surface	Byng Lane	Haig Street	Byng Street	9	25

RD003328	Surface	Byrd Avenue	Mcnair Avenue	The End South	9	25
RD003318	Surface	Byrd Avenue	The End North	Mcnair Avenue	9	25
RD003358	Surface	Byrne Crescent	Broome Street	Ford Road	9	25
RD003388	Surface	Byron Street	Carr Street	Coogee Bay Road	9	25
RD003378	Surface	Byron Street	Dudley Street	Carr Street	9	25
RD003368	Surface	Byron Street	The End	Dudley Street	9	25
RD003428	Surface	Caley Street	Burke Street	Eyre Street	9	25
RD015008	Surface	Canberra Lane	Rainbow Street	Helena Street	9	25
RD003580	Surface	Carlton Street	Anzac Parade	Doncaster Avenue	9	25
RD003620	Surface	Carnegie Circuit - East	Dampier Street	Warburton Street	9	25
RD003610	Surface	Carnegie Circuit - West	Warburton Street	Dampier Street	9	25
RD003670	Surface	Carr Street	Byron Street	Dudley Street	9	25
RD003813	Surface	Castle Street	Stephen Street	Challis Lane	9	25
RD003863	Surface	Challis Lane	Wentworth Street	Earl Street	9	25
RD003893	Surface	Chapman Avenue	Fenton Avenue	Maxwell Avenue	9	25
RD003913	Surface	Charman Avenue	Width Change	Percival Street	9	25
RD003923	Surface	Chatham Street	Carrington Road	St Luke Street	9	25
RD003933	Surface	Chelmsford Avenue	Davidson Crescent	Chelmsford Avenue	9	25
RD004064	Surface	Clara Street	High Street	Arthur Street	9	25
RD004274	Surface	Clyde Street	The End	The End	9	25

RD004284	Surface	Cobham Street	Wild Street	Kingsford Street	9	25
RD004305	Surface	Combles Parade	Menin Road	Daunt Avenue	9	25
RD004476	Surface	Cooper Lane	Mons Avenue	The End	9	25
RD004516	Surface	Courland Street	Dolphin Street	Coogee Street	9	25
RD004546	Surface	Court Avenue	Borrodale Road	Gardeners Road	9	25
RD004586	Surface	Cox Street	Oberon Street	Clifford Street	9	25
RD004606	Surface	Creer Street	Canberra Street	The End	9	25
RD004636	Surface	Curtin Crescent	Broome Street	Broome Street	9	25
RD004656	Surface	Cuzco Street	Denning Street	The End	9	25
RD004676	Surface	Daintrey Crescent	St Pauls Street	St Pauls Street	9	25
RD004706	Surface	Dampier Street	Carnegie Circuit	Wassell Street	9	25
RD004856	Surface	Davidson Crescent	Beauchamp Road	Malabar Road	9	25
RD004976	Surface	Denning Street	Evelyn Street	Garie Place	9	25
RD004986	Surface	Denning Street	Garie Place	Malabar Road	9	25
RD004966	Surface	Denning Street	Rainbow Street	Evelyn Street	9	25
RD005026	Surface	Dine Street	St Pauls Street	Barker Street	9	25
RD005056	Surface	Division Street	Arden Street	Brook Street	9	25
RD005066	Surface	Division Street	Brook Street	Mount Street	9	25
RD005206	Surface	Don Juan Avenue	Coogee Bay Road	The End	9	25
RD005166	Surface	Doncaster Avenue	Anzac Parade	Todman Avenue	9	25

RD005196	Surface	Doncaster Avenue	Borrodale Road	Edward Avenue	9	25
RD005259	Surface	Doran Street	Doncaster Avenue	Day Lane	9	25
RD005289	Surface	Douglas Street	The End	Varna Street	9	25
RD005359	Surface	Dudley Street	Brook Street	Mount Street	9	25
RD005409	Surface	Duke Street	Balfour Road	Kensington Road	9	25
RD005540	Surface	Dutruc Street	Rae Street	Chapel Street	9	25
RD005560	Surface	Dwyer Avenue	Budd Avenue	Reservoir Street	9	25
RD005550	Surface	Dwyer Avenue	Jennifer Street	Budd Avenue	9	25
RD005640	Surface	Eastern Avenue	Koorinda Avenue	Day Avenue	9	25
RD005722	Surface	Edward Avenue	Day Lane	Cottenham Avenue	9	25
RD005794	Surface	Elphinstone Road	Bundock Street	Iluka Place	9	25
RD005824	Surface	Endeavour Avenue	Anzac Parade	Goorawahl Avenue	9	25
RD005834	Surface	Ethel Street	Henry Street	Howard Street	9	25
RD005844	Surface	Ethne Avenue	Market Street	The End	9	25
RD005854	Surface	Eucla Crescent	Bilga Crescent	Bilga Crescent	9	25
RD005874	Surface	Eurimbla Avenue	High Street	The End	9	25
RD006075	Surface	Fewings Street	Greville Street	Susan Lane	9	25
RD006085	Surface	Figtree Avenue	Pine Street	The End	9	25
RD015388	Surface	Finucane Crescent	The End	Menin Road	9	25
RD006115	Surface	First Avenue	Duncan Street	The Causeway	9	25

RD006135	Surface	Fischer Street	Irvine Street	Anzac Parade	9	25
RD014477	Surface	Fisherman'S Road	Dacre Street	The End	9	25
RD006209	Surface	Fitzgerald Lane	Bridges Street	Scott Street	9	25
RD006239	Surface	Flood Street	Clovelly Road	Battery Street	9	25
RD006329	Surface	Ford Road	Broome Street	The End	9	25
RD006339	Surface	Forrest Street	Eyre Street	Anzac Parade	9	25
RD006369	Surface	Forsyth Street	Meeks Street	Rainbow Street	9	25
RD006359	Surface	Forsyth Street	Middle Street	Meeks Street	9	25
RD006479	Surface	Franklin Street	Barwon Crescent	The End	9	25
RD006489	Surface	Franklin Street	Lawson Street	The End	9	25
RD006509	Surface	Frederick Street	Meymott Street	Oberon Street	9	25
RD006519	Surface	French Street	Mons Avenue	Maroubra Road	9	25
RD006602	Surface	Gale Road	Bunnerong Road	Royal Street	9	25
RD006662	Surface	Gale Road	Flower Street	Bell Street	9	25
RD006642	Surface	Gale Road	Garden Street	Cooper Street	9	25
RD015407	Surface	Garrett Street	Holmes Street	The End	9	25
RD006866	Surface	George Street	Albert Street	Alison Road	9	25
RD014648	Surface	Gibson Place	Macquarie Street	The End	9	25
RD014868	Surface	Gilderthorpe Avenue	Clovelly Road	Frenchmans Road	9	25
RD006886	Surface	Giles Street	Macquarie Street	The End	9	25

RD006896	Surface	Gipps Avenue	Grose Street	Dwyer Avenue	9	25
RD006916	Surface	Glen Avenue	Alison Road	The End	9	25
RD006947	Surface	Goodrich Avenue	Tunstall Avenue	Eastern Avenue	9	25
RD006988	Surface	Goorawahl Avenue	Anzac Parade	Anzac Parade	9	25
RD014425	Surface	Green Street	Garden Street	Cooper Street	9	25
RD007078	Surface	Greville Street	Bishops Avenue	Fern Street	9	25
RD007088	Surface	Greville Street	Fern Street	Knox Street	9	25
RD007098	Surface	Greville Street	Knox Street	Arden Street	9	25
RD007108	Surface	Grose Street	Anzac Parade	Reservoir Street	9	25
RD015238	Surface	Gubbuteh Road	Anzac Parade	Mayo Street	9	25
RD007178	Surface	Hamel Road	Combles Parade	Menin Road	9	25
RD007198	Surface	Hampson Avenue	Amour Avenue	The End	9	25
RD007299	Surface	Harbourne Road	Meeks Street	Rainbow Street	9	25
RD007399	Surface	Hayward Street	Anzac Parade	Jacques Street	9	25
RD007409	Surface	Hayward Street	Jacques Street	Anderson Street	9	25
RD007429	Surface	Heath Street	Gray Street	The End	9	25
RD007439	Surface	Helena Street	Avoca Street	Canberra Street	9	25
RD007479	Surface	Hendy Avenue	Bundock Street	Rainbow Street	9	25
RD007489	Surface	Hendy Avenue	Rainbow Street	Oberon Street	9	25
RD007520	Surface	Henry Street	Meymott Street	Oberon Street	9	25

RD007590	Surface	High Street	Botany Street	Avoca Street	9	25
RD007610	Surface	Hill Street	Bream Street	Arcadia Street	9	25
RD007640	Surface	Hillary Parade	Oxley Street	Meehan Street	9	25
RD007721	Surface	Hodgson Street	Cowper Street	The End	9	25
RD007753	Surface	Holkam Avenue	Prince Street	The End	9	25
RD007815	Surface	Hooper Lane	Darley Road	Pine Street	9	25
RD007795	Surface	Hooper Street	Hooper Lane	Carrington Road	9	25
RD007965	Surface	Howard Street	Perouse Road	Dudley Street	9	25
RD007955	Surface	Howard Street	Titania Street	Perouse Road	9	25
RD002907	Surface	Huddart Lane	Evans Street	Dangar Street	9	25
RD008296	Surface	Hughes Avenue	Broome Street	The End	9	25
RD008026	Surface	Hurley Crescent	Wilkes Avenue	The End	9	25
RD008046	Surface	Iluka Place	Elphinstone Road	The End	9	25
RD008096	Surface	Inman Street	Torrington Road	Marine Parade	9	25
RD008206	Surface	Jacques Street	Apsley Lane	Botany Street	9	25
RD008216	Surface	Jacques Street	Botany Street	Anzac Parade	9	25
RD008186	Surface	Jacques Street	Bunnerong Road	Hayward Street	9	25
RD008226	Surface	Jane Street	The End	Middle Street	9	25
RD015280	Surface	Jenner Street	Pine Avenue	Anzac Parade	9	25
RD008256	Surface	Jennifer Street	Anzac Parade	Reservoir Street	9	25

RD014537	Surface	Jersey Road	Robey Street	Bunnerong Road	9	25
RD008316	Surface	John Lane	King Street	John Street	9	25
RD008366	Surface	Jordan Lane	Shirley Crescent	Bunnerong Road	9	25
RD008376	Surface	Judge Street	Coogee Bay Road	The End	9	25
RD008416	Surface	Kain Avenue	The End	Anzac Parade	9	25
RD008426	Surface	Kara Street	Howard Street	Barker Street	9	25
RD008467	Surface	Keith Street	Boundary Street	Clovelly Road	9	25
RD014828	Surface	Kelly Lane	Perry Street	The End	9	25
RD008498	Surface	Kemmis Street	Clovelly Road	Frenchmans Road	9	25
RD008712	Surface	Kingsford Street	Cobham Street	Bunnerong Road	9	25
RD008702	Surface	Kingsford Street	Hinkler Street	Cobham Street	9	25
RD008742	Surface	Knox Street	Clovelly Road	Greville Street	9	25
RD008752	Surface	Knox Street	Greville Street	Varna Street	9	25
RD008802	Surface	Koorngai Avenue	Koorngai Avenue	The End	9	25
RD008792	Surface	Koorngai Avenue	Yarra Road	Baragoola Avenue	9	25
RD008823	Surface	Kurrawa Avenue	Carr Street	Paul Lane	9	25
RD008855	Surface	Lancaster Crescent	Botany Street	The End	9	25
RD008865	Surface	Landy Street	Oxley Street	Hillary Parade	9	25
RD008895	Surface	Lasseter Avenue	Macquarie Street	Little Bay Road	9	25
RD008925	Surface	Lawson Street	Oxley Street	Anzac Parade	9	25

RD008905	Surface	Lawson Street	Pozieres Avenue	Finucane Crescent	9	25
RD008935	Surface	Lee Street	Howard Street	St Pauls Street	9	25
RD008976	Surface	Lenthall Street	Dowling Street	Mcdougall Street	9	25
RD008986	Surface	Lenthall Street	Mcdougall Street	Milroy Avenue	9	25
RD008996	Surface	Lenthall Street	Milroy Avenue	Todman Avenue	9	25
RD009016	Surface	Leonard Avenue	Borrodale Road	Gardeners Road	9	25
RD009006	Surface	Leonard Avenue	Edward Avenue	Borrodale Road	9	25
RD009036	Surface	Lexington Place	Minneapolis Crescent	New Orleans Crescent	9	25
RD009086	Surface	Lion Street	Oberon Street	Howard Street	9	25
RD015373	Surface	Lister Avenue	Pavilion Drive	Pine Avenue	9	25
RD002202	Surface	Little Lane	Little Street	The End	9	25
RD009156	Surface	Llanfoyst Street	Albert Street	The End	9	25
RD009208	Surface	Lorne Avenue	Roma Avenue	The End	9	25
RD009218	Surface	Lowe Street	Melrose Parade	The End	9	25
RD009238	Surface	Lurline Street	Torrington Road	Waterside Avenue	9	25
RD009380	Surface	Macquarie Street	Mitchell Street	Forrest Street	9	25
RD009550	Surface	Manwaring Avenue	Broome Street	The End	9	25
RD009560	Surface	Marcel Avenue	Carrington Road	Mount Street	9	25
RD009570	Surface	Marian Street	Rainbow Street	The End	9	25
RD015198	Surface	Marida Street	Hendy Avenue	Munda Street	9	25

RD009751	Surface	Marville Avenue	Botany Street	Walenore Avenue	9	25
RD014324	Surface	Mason Street	Hannan Street	Anzac Parade	9	25
RD009772	Surface	Maud Street	Barker Street	Hay Street	9	25
RD009792	Surface	Maxwell Avenue	Duncan Street	The End	9	25
RD015290	Surface	Mayo Street	Pavilion Drive	Jenner Street	9	25
RD009258	Surface	Mccauley Street	Australia Avenue	Botany Road	9	25
RD009288	Surface	Mcgowan Avenue	Napier Street	Raglan Street	9	25
RD009338	Surface	Mcnair Avenue	Botany Street	Byrd Avenue	9	25
RD009832	Surface	Meehan Street	Hillary Parade	Lawson Street	9	25
RD009872	Surface	Meeks Street	Willis Street	Kennedy Street	9	25
RD009912	Surface	Melody Street	Carr Street	The End	9	25
RD009942	Surface	Melody Street	Dolphin Street	Bream Street	9	25
RD009922	Surface	Melody Street	Stark Street	Coogee Bay Road	9	25
RD009972	Surface	Melrose Parade	Tower Street	The End	9	25
RD009992	Surface	Menin Road	Pozieres Avenue	Flinders Street	9	25
RD014788	Surface	Messines Place	Anzac Parade	The End	9	25
RD014334	Surface	Metcalfe Street	Garden Street	Cooper Street	9	25
RD010023	Surface	Meymott Street	Higgs Street	The End	9	25
RD010103	Surface	Middle Lane	Meeks Street	Middle Street	9	25
RD010193	Surface	Milroy Avenue	Baker Street	Lenthall Street	9	25

RD010353	Surface	Mons Avenue	Malabar Road	Marine Parade	9	25
RD010373	Surface	Mooramie Avenue	Barker Street	Day Avenue	9	25
RD010383	Surface	Mooramie Avenue	Day Avenue	Koorinda Avenue	9	25
RD010393	Surface	Mooramie Avenue	Koorinda Avenue	Roma Avenue	9	25
RD010414	Surface	Moore Street	Major Street	Beach Street	9	25
RD010454	Surface	Mort Lane	White Street	Govett Lane	9	25
RD010484	Surface	Mount Street	Dudley Street	Carr Street	9	25
RD010564	Surface	Moverly Road	Anzac Parade	Loch Maree Street	9	25
RD010640	Surface	Mulgray Avenue	Galvin Street	Boyce Road	9	25
RD010660	Surface	Mundarra Street	Battery Street	Clovelly Road	9	25
RD010700	Surface	Murray Street	Ferguson Street	Anzac Parade	9	25
RD010690	Surface	Murray Street	Robey Street	Ferguson Street	9	25
RD014547	Surface	Murrong Place	Goolagong Place	The End	9	25
RD010710	Surface	Myrtle Street	Dowling Street	Virginia Street	9	25
RD010752	Surface	Namatjira Place	Little Bay Road	The End	9	25
RD010762	Surface	Nancye Street	Lee Street	St Pauls Street	9	25
RD010802	Surface	Napper Street	Denning Street	Malabar Road	9	25
RD009146	Surface	Nathan Street	Carrington Road	Brighton Road	9	25
RD010812	Surface	Nelson Street	Howard Street	Ivy Street	9	25
RD010862	Surface	Nevorie Crescent	Nevorie Crescent	Hannan Street	9	25

RD015270	Surface	Newtown Street	Mayo Street	Gubbuteh Road	9	25
RD010922	Surface	Nolan Avenue	Fern Street	Seaview Street	9	25
RD010952	Surface	Norfolk Parade	Franklin Street	Parking Lot	9	25
RD010972	Surface	Northumberland Lane	Park Lane	Warner Avenue	9	25
RD011012	Surface	Norton Lane	Norton Street	Barker Street	9	25
RD010982	Surface	Norton Street	Botany Street	Kennedy Street	9	25
RD010992	Surface	Norton Street	Kennedy Street	Willis Street	9	25
RD011053	Surface	Oak Street	Melrose Parade	The End	9	25
RD011073	Surface	Oberon Street	Dundas Street	Arden Street	9	25
RD011143	Surface	Ocean Street	Boundary Street	Eastbourne Avenue	9	25
RD011163	Surface	O'Connell Avenue	Robey Street	Sharp Street	9	25
RD011173	Surface	Oorana Avenue	Adina Avenue	Canara Avenue	9	25
RD011183	Surface	Oorana Avenue	Canara Avenue	Elaroo Avenue	9	25
RD011213	Surface	Osprey Court	Portland Crescent	The End	9	25
RD011389	Surface	Pardey Street	Irvine Street	Smith Street	9	25
RD011432	Surface	Park Avenue	Gilderthorpe Avenue	Pine Street	9	25
RD011482	Surface	Park Lane	Northumberland Street	Ocean Street	9	25
RD011442	Surface	Park Street	Boundary Street	Surfside Avenue	9	25
RD011452	Surface	Park Street	Surfside Avenue	The End	9	25
RD011502	Surface	Partanna Avenue	Bunnerong Road	The End	9	25

RD011512	Surface	Paterson Street	Hunter Avenue	Daunt Avenue	9	25
RD015138	Surface	Paul Lane	Kurrawa Avenue	The End	9	25
RD015300	Surface	Pavilion Drive	Pine Avenue	Lister Avenue	9	25
RD011562	Surface	Percival Street	Storey Street	Snape Street	9	25
RD011612	Surface	Perouse Road	St Pauls Street	Coogee Bay Road	9	25
RD011674	Surface	Piccadilly Place	Bruce Bennetts Place	The End	9	25
RD014627	Surface	Pillars Place	Peterson Street	The End	9	25
RD015320	Surface	Pine Avenue	Lister Avenue	Anzac Parade	9	25
RD011704	Surface	Pitt Street	Alison Road	The End	9	25
RD011724	Surface	Portland Crescent	Chester Avenue	Chicago Avenue	9	25
RD011854	Surface	Prince Edward Street	Raglan Street	Napier Street	9	25
RD011824	Surface	Prince Lane	Prince Street	Church Street	9	25
RD011814	Surface	Prince Street	Cowper Street	Alison Road	9	25
RD011925	Surface	Rae Street	Dutruc Street	St Marks Road	9	25
RD011987	Surface	Rainbow Street	Avoca Street	Canberra Street	9	25
RD012087	Surface	Raleigh Street	Alison Road	The End	9	25
RD012158	Surface	Rigney Avenue	Sturt Street	The End	9	25
RD006561	Surface	Roads			9	25
RD012240	Surface	Romani Parade	Pozieres Avenue	Finucane Crescent	9	25
RD012250	Surface	Ron Filbee Place	Lurline Street	The End	9	25



RD012260	Surface	Roper Avenue	Elphinstone Road	The End	9	25
RD012270	Surface	Roscrea Avenue	Frenchmans Road	Gilderthorpe Avenue	9	25
RD012340	Surface	Runic Lane	Hannan Street	Anzac Parade	9	25
RD012350	Surface	Russell Court	Portland Crescent	The End	9	25
RD012360	Surface	Ryan Avenue	Cantrill Avenue	The End	9	25
RD012370	Surface	Sackville Street	Duncan Street	Marine Parade	9	25
RD012390	Surface	Scott Street	Broome Street	Malabar Road	9	25
RD012420	Surface	Seaside Parade	Liguria Street	The End	9	25
RD012440	Surface	Seaview Street	Douglas Street	The End	9	25
RD012430	Surface	Seaview Street	Nolan Avenue	Greville Street	9	25
RD012460	Surface	See Street	Doncaster Avenue	Houston Road	9	25
RD012500	Surface	Sharp Street	Jersey Road	Beauchamp Road	9	25
RD012520	Surface	Shepherd Street	Everett Street	Anzac Parade	9	25
RD012530	Surface	Sherwood Street	Balfour Road	The End	9	25
RD012540	Surface	Shirley Crescent	Bunnerong Road	Bunnerong Road	9	25
RD012550	Surface	Short Street	Avoca Street	Belmore Road	9	25
RD012560	Surface	Silver Street	Belmore Road	Botany Street	9	25
RD012591	Surface	Smith Street	Fischer Street	Snape Street	9	25
RD012601	Surface	Smithfield Avenue	Brook Street	The End	9	25
RD012621	Surface	Solander Street	Perry Street	The End	9	25

RD012641	Surface	Soudan Lane	Soudan Street	The End	9	25
RD012631	Surface	Soudan Street	Avoca Street	Perouse Road	9	25
RD012901	Surface	St Luke Street	Coogee Bay Road	Dolphin Street	9	25
RD012931	Surface	St Marks Lane	Clovelly Road	The End	9	25
RD012911	Surface	St Marks Road	Oswald Street	Alison Road	9	25
RD012951	Surface	St Pauls Street	Perouse Road	Dudley Street	9	25
RD012671	Surface	Stephen Street	Wentworth Street	Chepstow Street	9	25
RD012701	Surface	Stewart Avenue	Milne Avenue	Daunt Avenue	9	25
RD012711	Surface	Stewart Street	Lee Street	The End	9	25
RD012791	Surface	Storey Street	Amour Avenue	Malabar Road	9	25
RD012741	Surface	Storey Street	Anzac Parade	Loch Maree Street	9	25
RD014908	Surface	Strachan Street	Houston Road	Day Lane	9	25
RD008086	Surface	Strickland Avenue	Beauchamp Road	The End	9	25
RD012851	Surface	Sturt Street	Paton Street	Avoca Street	9	25
RD012881	Surface	Surfside Avenue	Park Street	Keith Street	9	25
RD013032	Surface	The Avenue	Alison Road	Frances Street	9	25
RD013042	Surface	The Avenue	Frances Street	Cowper Street	9	25
RD013052	Surface	The Boulevarde	Mcgowan Avenue	The End	9	25
RD013092	Surface	The Corso	Duncan Street	Marine Parade	9	25
RD013102	Surface	Thomas Street	Byron Street	Higgs Street	9	25

RD013122	Surface	Thorpe Street	Melrose Parade	The End	9	25
RD013132	Surface	Titania Street	Oberon Street	Howard Street	9	25
RD013232	Surface	Tressidder Avenue	Tunstall Avenue	Eastern Avenue	9	25
RD013273	Surface	Tucabia Street	Macleay Street	Johnston Parade	9	25
RD013283	Surface	Tunstall Avenue	Gardeners Road	Addison Street	9	25
RD013314	Surface	Undine Street	Banks Street	Marine Parade	9	25
RD014487	Surface	Vanny Place	Amour Avenue	The End	9	25
RD013404	Surface	Victoria Street	Ireton Street	Franklin Street	9	25
RD013384	Surface	Victoria Street	Napier Street	Raglan Street	9	25
RD013580	Surface	Waratah Avenue	Botany Street	Belmore Road	9	25
RD013590	Surface	Warburton Street	Brisbane Street	Dampier Street	9	25
RD013620	Surface	Warner Avenue	Campbell Lane	The End	9	25
RD013650	Surface	Wassell Street	Burke Street	The End	9	25
RD013640	Surface	Wassell Street	Franklin Street	Burke Street	9	25
RD013670	Surface	Wauchope Crescent	Elphinstone Road	Elphinstone Road	9	25
RD013690	Surface	Wells Street	Macquarie Street	The End	9	25
RD013740	Surface	White Street	Wentworth Street	Dangar Street	9	25
RD013833	Surface	William Street	Cowper Street	King Street	9	25
RD013873	Surface	Willis Street	Meeks Street	Rainbow Street	9	25
RD013843	Surface	Willis Street	Oval Lane	Barker Street	9	25

RD013933	Surface	Winburn Avenue	Tunstall Avenue	Eastern Avenue	9	25
RD013963	Surface	Winkurra Street	Dowling Street	Milroy Avenue	9	25
RD013983	Surface	Wisdom Street	The End East	Alexandria Parade	9	25
RD014678	Surface	Woli Place	Bilga Crescent	The End	9	25
RD014003	Surface	Wolseley Road	Neptune Street	Cairo Street	9	25
RD014013	Surface	Wood Street	Rae Street	Eulalie Avenue	9	25
RD014053	Surface	Wride Street	Duncan Street	Malabar Road	9	25
RD014073	Surface	Yamba Place	Elphinstone Road	The End	9	25
RD014103	Surface	Yorktown Parade	New Orleans Crescent	Chester Avenue	9	25
RD014113	Surface	Young Street	Barker Street	The End	9	25
RD014123	Surface	Zions Avenue	Lucas Avenue	Prince Edward Street	9	25

Appendix B Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management Randwick CC																																																																																																																																																																						
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Roads_S3_V9										Asset Management Plan																																																																																																																																																												
First year of expenditure projections 2018 (financial yr ending)										 																																																																																																																																																												
Roads Asset values at start of planning period Current replacement cost \$766,842 (000) Depreciable amount \$766,842 (000) Depreciated replacement cost \$652,086 (000) Annual depreciation expense \$8,653 (000)										Operations and Maintenance Costs for New Assets Calc CRC from Asset Register \$766,842 (000) This is a check for you. Additional operations costs 0.13% Additional maintenance 0.20% Additional depreciation 1.13% Planned renewal budget (information only)										Existing %ages calculated from data in worksheet 0.13% of CRC (10 yr average) 0.20% of CRC (10 yr average) 1.13% of Dep Amt 0.39% of CRC (Year 1 comparison)																																																																																																																																																		
Planned Expenditures from LTFP 20 Year Expenditure Projections Note: Enter all values in current 2018 values																																																																																																																																																																						
Financial year ending																																																																																																																																																																						
<table border="1"> <thead> <tr> <th>2018</th><th>2019</th><th>2020</th><th>2021</th><th>2022</th><th>2023</th><th>2024</th><th>2025</th><th>2026</th><th>2027</th><th>2028</th><th>2029</th><th>2030</th><th>2031</th><th>2032</th><th>2033</th><th>2034</th><th>2035</th><th>2036</th><th>2037</th> </tr> </thead> <tbody> <tr> <td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td><td>\$000</td> </tr> </tbody> </table>																				2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000																																																																																																											
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\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000																																																																																																																																																			
Expenditure Outlays included in Long Term Financial Plan (in current \$ values)										Average of first 10 year Expenditure Outlays from LTFP																																																																																																																																																												
Operations																																																																																																																																																																						
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Reactive maintenance budget	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227	\$227																																																																																																																																																			
Planned maintenance budget	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288	\$1,288																																																																																																																																																			
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Planned renewal budget	\$3,000	\$4,500	\$4,850	\$5,200	\$5,550	\$5,900	\$6,250	\$6,600	\$6,950	\$7,300	\$7,650	\$8,000	\$8,350	\$8,650	\$8,650	\$8,650	\$8,650	\$8,650	\$8,650																																																																																																																																																			
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